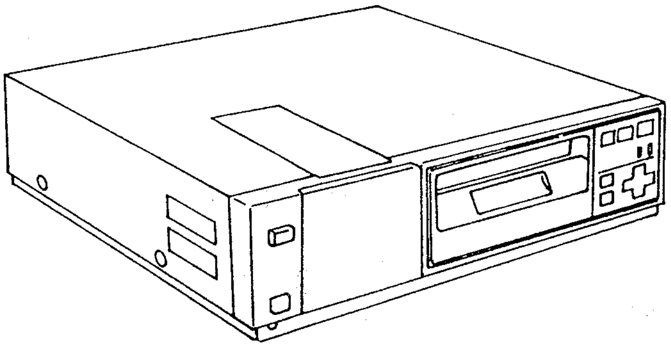
SONY®

COLOR VIDEO PRINTER

UP-3000P

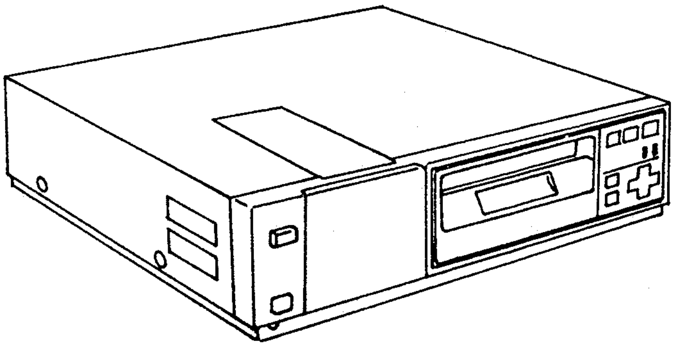
SERVICE MANUAL



UP-3000P

SERVICE MANUAL

AEP Model
UK Model
Germany Model



SPECIFICATIONS

Printing system	Sublimation heat transfer printing
Picture elements	716 × 564 PELS 750 × 582 PELS
Total gradation	256 levels each for yellow, magenta, and cyan
Printing time	Approx. 90 seconds for color printing and approx. 50 seconds for B & W printing
TV system	PAL (B,G,I) standards
Video signal	INPUT (Video input terminals) RGB SYNC (Analog RGB video signal) BNC connector, 0.7Vp-p, 75 ohms S VIDEO (Separate luminance(Y) and chrominance(C) signals) Y: 1Vp-p C: 0.29Vp-p, 75 ohms VIDEO (PAL composite video signal) BNC connector, 1Vp-p 75 ohms negative MONITOR OUT (Video output terminals) RGB SYNC (Analog RGB video signal) BNC connector RGB: 0.7Vp-p, 75 ohms terminated SYNC: 1Vp-p S VIDEO (Separate luminance(Y) and chrominance(C) signals) Y: 1Vp-p, 75 ohms terminated C: 0.29Vp-p, 75 ohms terminated VIDEO (PAL composite video signal) BNC connector, 1Vp-p, 75 ohms negative Remote control terminal (Front panel, for the supplied remote control unit only) Special mini jack CONTROL (Terminal for the foot switch FS-20, not supplied) Stereo mini jack RS-232C (Computer control interface) 25-pin connector
Ink ribbon cassette and printing paper	Color printing pack UPC-3010P (for 80 prints)
Power requirements	200 ~ 240 V AC, 50/60Hz
Power consumption	1.5A Max
Operating temperature	5°C to 35°C (41°F to 95°F)
Dimensions	Approx. 430 × 125 × 435 mm (w/h/d) (17 × 5 × $17\frac{1}{8}$ inches)
Weight	Approx. 10kg (22 lb)

CAUTION
A CERTIFIED PLUG RATED 250V, 6A OR MORE FOR CLASS I EQUIPMENT MUST BE ATTACHED TO THE END OF THE POWER CORD.

— Continued on next page —

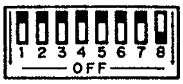
COLOR VIDEO PRINTER

SONY®

Supplied accessories

Color printing pack (1)
Paper tray (1)
AC power cord (1)
Remote control unit (1)
Connecting cable for remote control unit (1)
Dry battery SUM-3 (NU) (2)
Operating instructions (1)

Configuration of the DIP switch



1 Reserved
2 Reserved
3 Reserved
4 Selects the type of image after pressing the PRINT button.
ON: Memory image
OFF: Playback image
5 ON: Wide mode
OFF: Usually set at this position
6 Reserved
7, 8 Changes the settings for the baud rate of RS-232C.

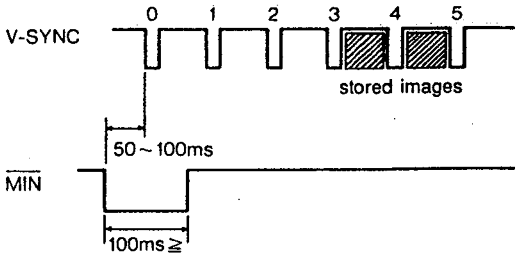
7	8	Baud rate (bits per second)
OFF	OFF	1200
ON	OFF	2400
OFF	ON	4800*
ON	ON	9600

* The baud rate is factory-set to 4800.

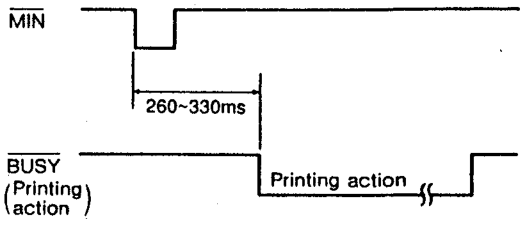
Using the automatic printing capabilities (CONTROL)
If you send the remote control pulse signals illustrated below through the CONTROL terminal, you can store video images in memory and then print them automatically.

Turn on the power of the printer and select the input signal.
Set the monitor display to the input signal.
Send a remote control pulse signal at the timing shown below.

MEMORY IN timing



PRINT timing



Note: This timing is when the printer is in the stand-by mode.

Design and specifications subject to change without notice.

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS INDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COPMONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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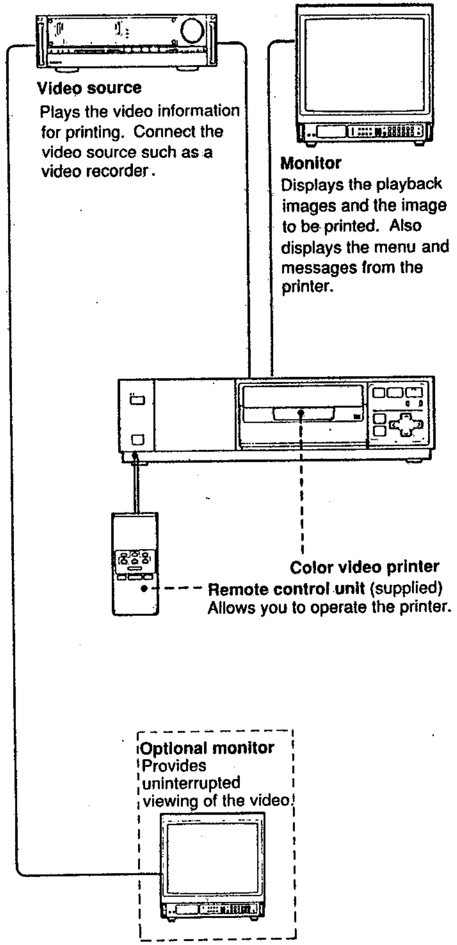
SUPPLEMENT-1

SECTION 1
GENERAL

1-1. SYSTEM OVERVIEW

System configuration

Connect a video machine capable of playing a video image to the printer.
Also connect a monitor to the printer so that you can view an image before you print it. You may connect an additional monitor to the video source to display an uninterrupted moving video image.



Video source
Plays the video information for printing. Connect the video source such as a video recorder.

Monitor
Displays the playback images and the image to be printed. Also displays the menu and messages from the printer.

Color video printer

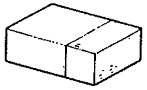
Remote control unit (supplied)
Allows you to operate the printer.

Optional monitor
Provides uninterrupted viewing of the video.

Ink ribbon cassette and print paper

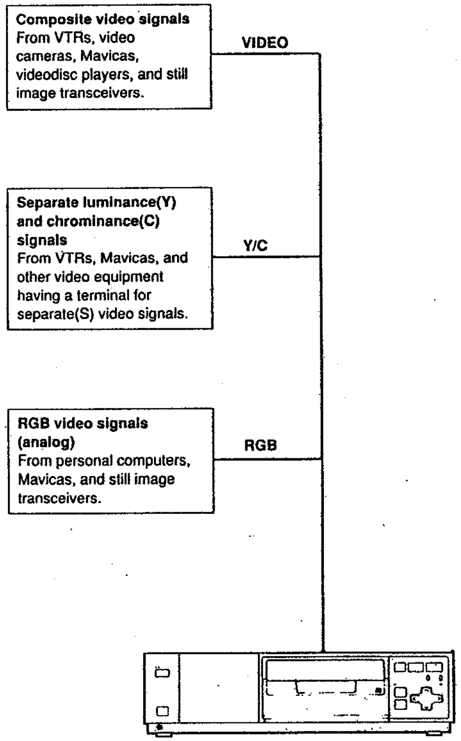
You will need an ink ribbon cassette and print paper to make prints of video images. The cassette and sheets come as sets. Make sure to use the appropriate set of the ink ribbon cassette and print paper for this printer. If you use print paper or an ink ribbon cassette separately, or if you use print paper or an ink ribbon cassette for other printers, you cannot obtain good prints or even may cause damage to the printer.

Color printing pack UPC-3010P
One pack includes an ink ribbon cassette and 80 sheets of 4 1/4" x 5 3/4" (A6 size) print paper.



Video signals that can be used by the color video printer

The signals outlined below can be used by the Color Video Printer to print an image. The way they are actually connected is described on page 16.



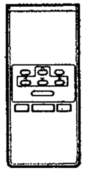
Composite video signals
From VTRs, video cameras, Mavicas, videodisc players, and still image transceivers.

Separate luminance(Y) and chrominance(C) signals
From VTRs, Mavicas, and other video equipment having a terminal for separate(S) video signals.

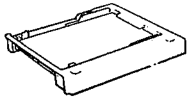
RGB video signals (analog)
From personal computers, Mavicas, and still image transceivers.

Supplied accessories

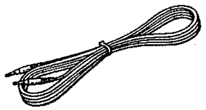
Remote control unit (1)



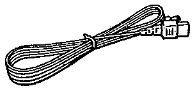
Paper tray (1)



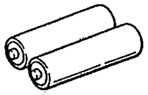
Connecting cable for the remote control unit (1)



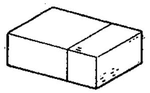
AC power cord (1)



Dry batteries (2)

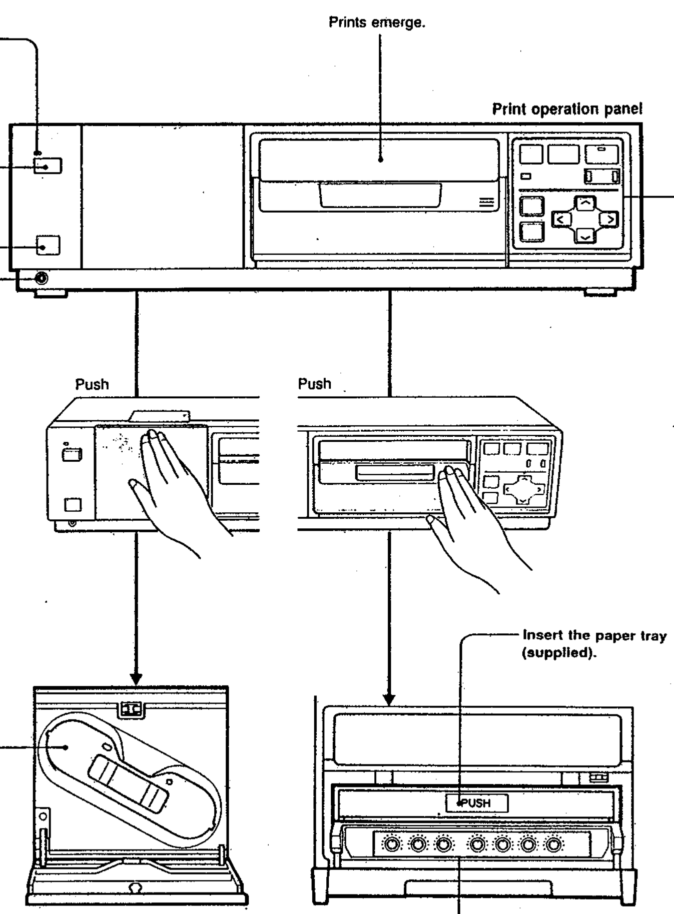


Color printing pack (40 sheets) (1)



1-2. LOCATION AND FUNCTION OF PARTS AND CONTROLS

Front panel



When the printer is on, the green lamp lights.

POWER (power source) switch

Remote sensor
Detects infrared rays when you use the remote control wireless. (See page 18.)

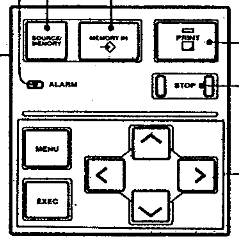
Remote control terminal
Use this connector when you use the remote control wired. (See page 19.)

Prints emerge.

Insert an ink ribbon cassette. (See page 20.)

Insert the paper tray (supplied).

Picture quality and color adjustment controls
Adjusts picture quality and color. (See page 52.)



ALARM lamp
When the print paper is jamming or other error occurs, the red lamp lights. (See page 62.)

Changes the setting for the output signal.

Push to store an image in memory.

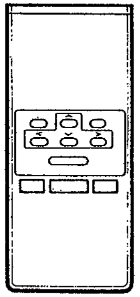
Push to make prints.

Push to stop the printing midway.

Changes other settings.

Remote Control Unit

Operations are the same as the print operation panel on the front panel of the printer. (See page 18.)

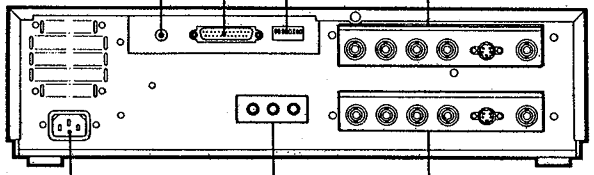


Rear panel

DIP switch
Changes the settings for the wide mode and others. (See page 60. For the wide mode, refer to page 58.)

RS-232C interface
Connect an interface cable when you operate the printer over a computer. For details, refer to "COLOR VIDEO PRINTER INTERFACE MANUAL UPM-3000" (not supplied).

CONTROl terminal
Connect the foot switch FS-20 (not supplied) here. (See page 61.)



Connect the AC power cord (supplied) here.

Adjust the color on the monitor.

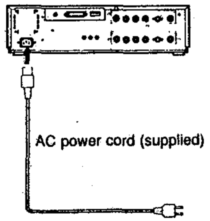
Connect the video source here.

Connect the monitor here.

1-3. CONNECTIONS

Follow these steps to connect the necessary equipment.

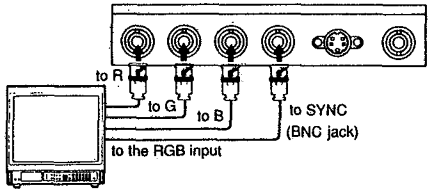
1 Connecting the AC power cord


AC power cord (supplied)

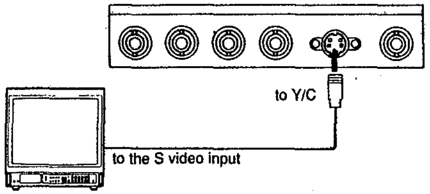
Note:
For safety, be sure to connect the AC power cord to the AC outlet after you have made all the other necessary connections.

2 Connecting the monitor

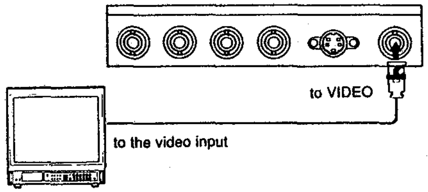
For monitors with RGB inputs


to R
to G
to B
to SYNC
(BNC jack)
to the RGB input

For monitors with separate Y/C video inputs


to Y/C
to the S video input

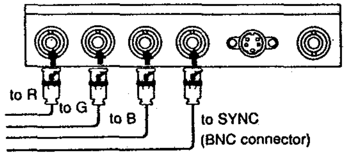
For monitors with only video inputs


to VIDEO
to the video input

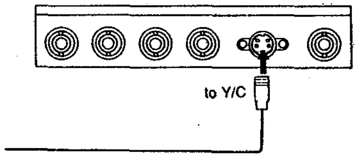
Note:
When the printer is connected to the video input, it may be difficult to match the color of the monitor to that of the prints.

3 Connecting the video

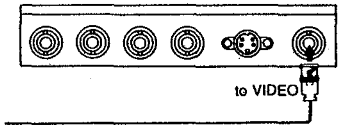
For equipment with an RGB video signal
The SYNC signal does not need to be connected if a sync signal is added on the G signal.


to R
to G
to B
to SYNC
(BNC connector)

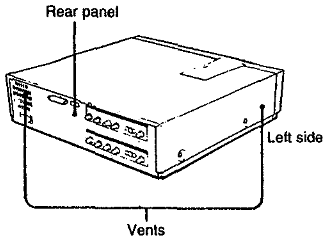
For equipment with a separate Y/C signal



For equipment with a composite video signal



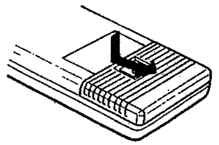
Note on installation:
Leave enough room around the printer for air to circulate from the fan at the back through the vents on the left side.

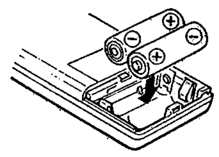

Rear panel
Left side
Vents

1-4. USING THE REMOTE CONTROL UNIT

You can use the supplied remote control unit either wireless or wired. Operations are the same as the front panel of the printer.

Inserting batteries
Insert batteries in the remote control unit. Open the battery case lid and insert the two supplied SUM-3 1.5V batteries in the proper plus ⊕ and minus ⊖ directions.

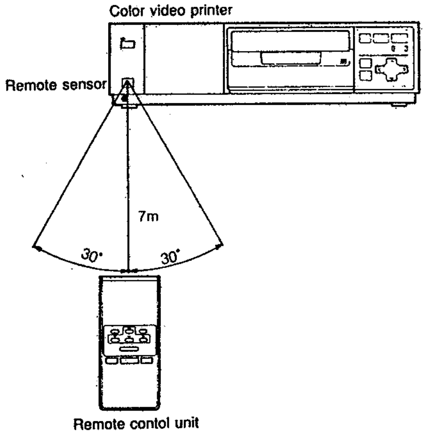




After inserting batteries, slide the lid in.

Using the remote control unit wireless

How to use the remote control unit
Point the head of the remote control unit toward the remote sensor on the printer. You can operate the printer with the remote control within 7m of the printer.


Color video printer
Remote sensor
7m
30°
30°
Remote contol unit

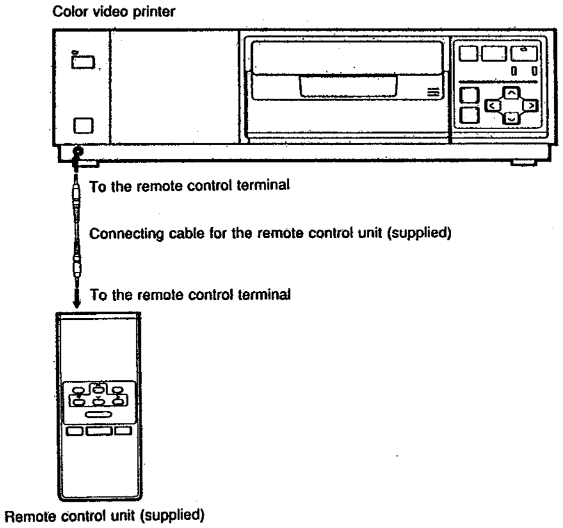
Battery life
The battery life varies depending on how frequently you use the remote control unit. Batteries **usually** last **approximately 6 months.** Replace the batteries with new ones when the operating range has noticeably shortened.

Notes on using batteries
- Remove batteries from the remote control unit when you do not use it for an extended period of time or when you use it wired. Batteries may leak if they are left unused in the battery case.
- In case batteries leak, clean the battery case with a soft cloth and replace batteries with new ones.
- Insert batteries in the correct directions according to the ⊕ and ⊖ indications of the battery case.
- When you replace batteries, make sure to use new batteries only. Never mix a new battery with a used battery or with a different kind of battery.

Using the remote control unit wired

Use supplied connecting cable for the remote control unit.

Connecting the remote control unit

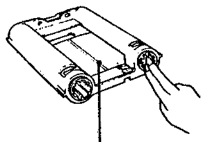

Color video printer
To the remote control terminal
Connecting cable for the remote control unit (supplied)
To the remote control terminal
Remote control unit (supplied)

1-5. LOADING AN INK RIBBON CASSETTE

Follow these steps to load an ink ribbon cassette.

1 Remove the slack from the ribbon.

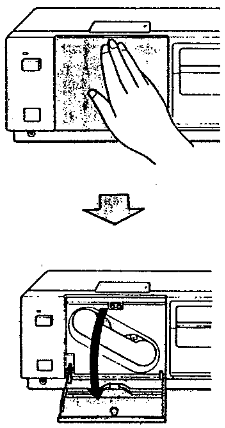
If the ribbon is left slack, it may be crumpled and damaged when inserted.



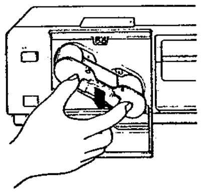
Remove the slack so that the black bars locate between the two rolls.

2 Open the front cabinet.

Push PUSH and open the cabinet.

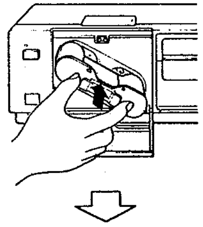


3 If an ink ribbon cassette is already in the printer, take it out.

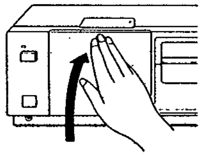


4 Load the new ink ribbon cassette.

Insert the new ink ribbon cassette firmly.

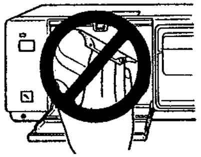


Close the cabinet panel.



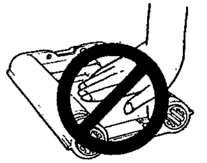
Caution

Do not put your hand into the ink ribbon cassette compartment. As the thermal head reaches high temperatures, you may burn yourself if you touch it.

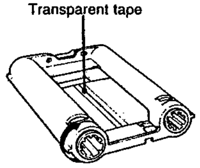


Notes on using ink ribbon cassettes

- Do not touch the ribbon or place the cassette in a dusty place. Body oils or dust stuck to the ink ribbon will cause imperfect printing.



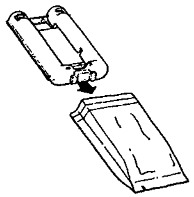
- If your ink ribbon should tear, repair it with transparent tape and there should be no problem in using the remaining portion of the ribbon.



Note:
If you repair the ribbon with transparent tape, advance the ribbon to the next group of black bars before inserting the ink ribbon cassette in the printer.

Notes on storing ink ribbon cassette

- Avoid placing the ink ribbon cassette in a location subject to:
  - — high temperatures
  - — high humidity
  - — excessive dust
  - — direct sunlight
- Store a partially used ink ribbon in the moisture-proof bag you received it in.

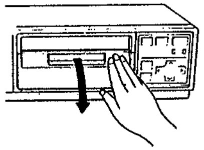


1-6. LOADING THE PRINT PAPER

Follow these steps to load print paper in the printer. Be careful not to touch the printing surface.

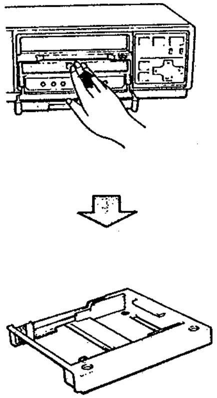
1 Open the front panel.

Push PUSH and open the panel.

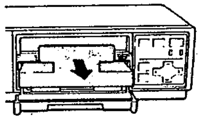


2 Take out the paper tray.

Push PUSH to eject the paper tray.

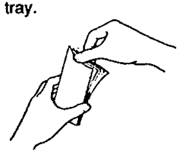


When you use the printer for the first time...
Instead of the paper tray, a spacer has been inserted. Remove the spacer before using the printer.

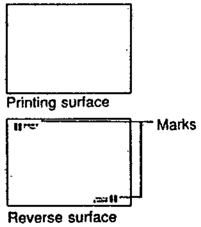


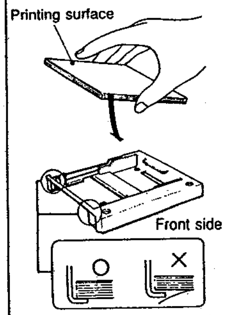
3 Place the print paper in the paper tray.

1 Ruffle the stack of printing paper thoroughly before placing it in the tray.



2 Place the paper in the paper tray with the printing surface facing up. The surface without marks is the printing surface.

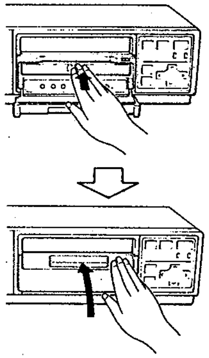




Set the paper securely under the teeth.

4 Slide the paper tray and close the front panel.

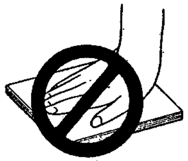
Slide the paper tray in the printer so that it clicks in place.



Notes

- The paper tray holds up to 40 sheets of print paper (one package). Be careful not to place more than 40 sheets when you add sheets. If you exceed the limit, the sheets may jam.
- Do not mix print papers of different kinds. The paper may jam.

Note on using print paper
Do not touch the printing surface. Body oils or dust stuck to the printing surface will cause imperfect printing.

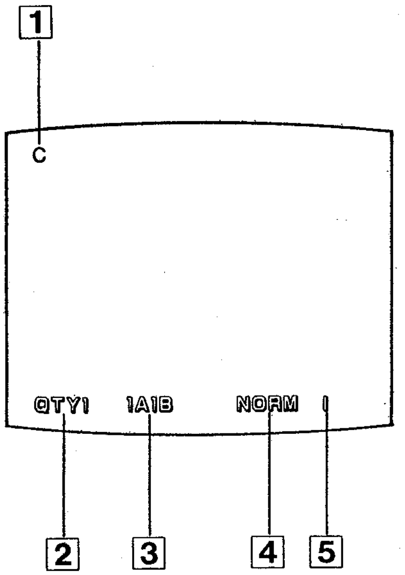


Note on storing print paper

- Avoid placing the print paper in a location subject to:
  - — high temperature
  - — high humidity
  - — excessive dust
  - — direct sunlight

1-7. SCREEN MESSAGES

When you turn on the printer, the following screen messages appear. You can erase the display. (See "Erasing screen messages" on page 54.)

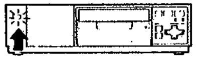


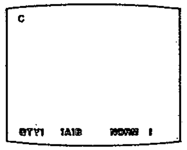
1. **C is displayed when you print with a caption including the date or comments.** (See page 46.)
   C (Caption)
2. **Quantity of print copies is displayed.** (See page 32.)
   QTY (Quantity)
3. **Memory use is displayed.** (See page 38.)
4. **Printing method is displayed.**
   NORM (Normal) (See page 44.)
5. **Type of the picture shown on the monitor is displayed:**
   I (Input) .... the moving picture of the input signal
   M (Memory) .... the picture stored in memory

1-8. SELECTING THE INPUT SIGNAL

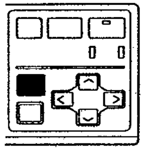
Before you print, select the type of input signal from RGB, separate Y/C video signal, and VIDEO signal. Once you select the type of input signal, the setting remains until you enter a new setting—even if you turn the power off.

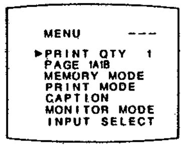
1 **Turn on the monitor and the printer.**





2 **Press MENU.**

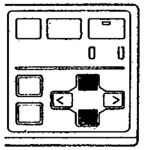


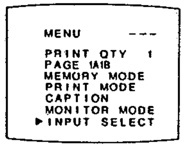


MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

Menu appears on the screen.

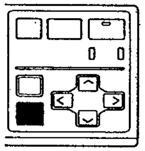
3 **Move ▶ on the monitor to INPUT SELECT by pressing ⋀⋁.**

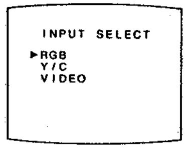




MENU ---
PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
▶INPUT SELECT

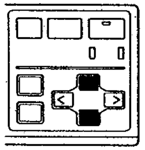
4 **Press EXEC.**

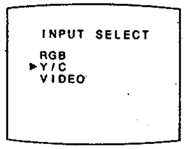




INPUT SELECT
▶RGB
Y/C
VIDEO

5 **Move ▶ to the type of input signals of the connected video equipment by pressing ⋀⋁.**

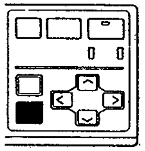


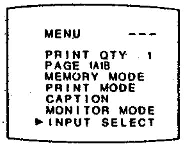


INPUT SELECT
RGB
▶Y/C
VIDEO

When you want to select the separate Y/C video signal, select Y/C.

6 **Press EXEC.**

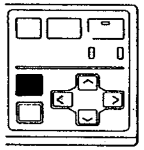


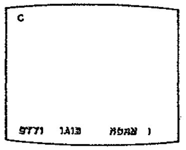


MENU ---
PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
▶INPUT SELECT

Menu appears again on the screen.

7 **Press MENU.**



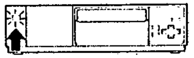


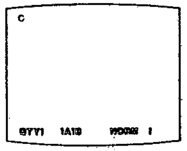
1-9. MAKING PRINTS

This section explains how to print a full-size image. The following are the basic steps for printing one full-size image.
Before printing, select the input signal of the image you want to print. For the setting of the input signal, refer to page 28.
The setting remains until you enter a new setting, even if you turn off the power. If your printer is set at 4 or 25 reduced images, change settings for a full-size image before printing.

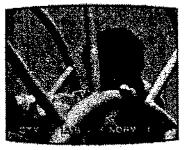
1 Check the ink ribbon cassette and the print paper.

2 Turn on the printer and the video monitor.

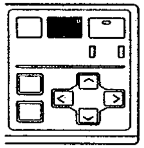




3 Play back the video images.



4 When the image you want to print appears on the monitor, press MEMORY IN → to store it in memory.

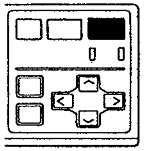


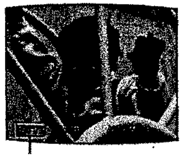
The image stored in memory is displayed.

Changing the image you want to print
Press SOURCE/MEMORY to return to the playback image. Press MEMORY IN → again to store a new image in memory. The previous image is replaced with the new one.

5 Press PRINT ◻.

The playback image reappears on the screen. Wait about 90 seconds for a color print to emerge and about 50 seconds for a monochrome print to emerge.



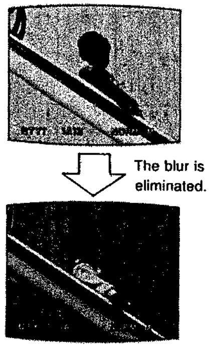


Blinks during the printing process. Printing begins - Yellow - Purple - Blue - Printing ends.

Stopping the printing midway
Press STOP. The printing will immediately end and the paper will be ejected in the print tray.

Caution
Never turn off the power during printing or operation. Otherwise trouble may occur.

When the image in memory is blurry
A quickly moving image may be blurred when it is printed. In this case, change the memory mode from frame to field to eliminate the blur. For how to change the memory mode, refer to page 38. For the cause of blur, see page 59.



The blur is eliminated.

When the printer does not print
- As long as an error message is displayed on the monitor, the printer will not print. For correcting the error, see "Error Messages" on page 62.
- When you turn off the power, the image stored in memory is erased. Store an image again to print it.

If a black line appears in prints
An image is sometimes printed with a black line although no black line appears on the monitor. You can eliminate the black line from prints.
For correction, see page 56.

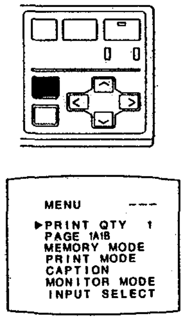
When you want to see the image that is hidden below the screen messages
You can erase the screen messages on the monitor. For the procedure, refer to page 54.
You can operate the printer in the same way, whether or not the messages appear.

Notes on preserving your prints
- Do not put a print under a soft vinyl chloride desk mat or in a soft vinyl chloride folder containing a plasticizer. Also avoid leaving plastic erasers on top of the prints. The ink will stick to the plastic surface.
- To avoid degradation of the color , do no place a print in locations subject to:
  - — direct sunlight
  - — high temperatures
  - — high humidity

Making more than one copy of an image

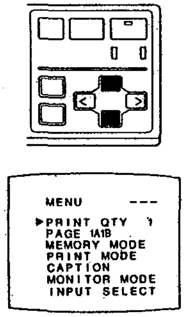
You can print up to 40 copies of a stored image. Do the following steps before you start printing or while you are printing the first copy. You can change the designated number of copies any time until the printing is fully completed.

1 Press MENU.

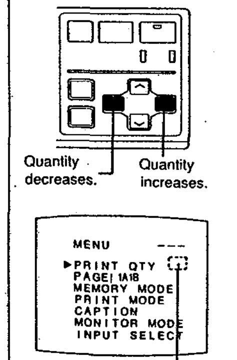

MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

Menu appears on the screen.

2 Move ▶ to PRINT QTY by pressing ⋀ ⋁.

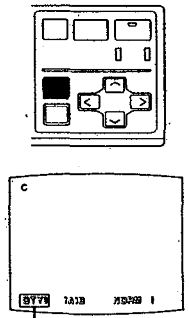

MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

3 Set the number of copies by pressing < >.


Quantity decreases.
Quantity increases.
MENU ---
▶PRINT QTY
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

Quantity of copies

4 Press MENU.



Quantity of copies
("QTY" stands for quantity.)

When the print paper runs out during printing
Fill the tray with print paper and press PRINT again.

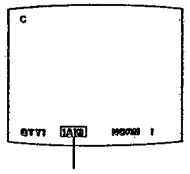
1-10. USING THE MEMORY

This section shows you how to use and set the memory.

To print an image, you must store it in the memory for printing.
First make the memory settings and store an image in the memory.
The memory is divided into two field memories, 1A and 1B. You can use the memory by combining 1A and 1B together or splitting them into four. The status of the memory is called the "MEMORY MODE." The "frame mode" means that the two field memories 1A and 1B are used together to store one frame of an image. On the other hand, the "field mode" means that only one field memory of 1A or 1B is used to store one field of an image.

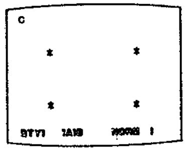
The memory mode is displayed on the screen.

FRM (frame) mode

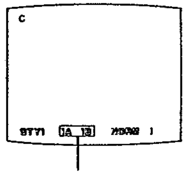


Using the memory by combining 1A and 1B together.

Four reduced images (frame mode)

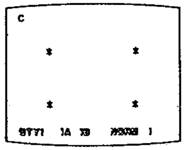


FLD (field) mode



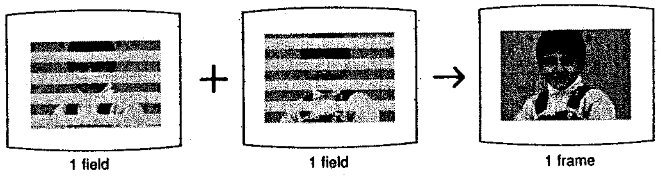
Using the memory by splitting it into 1A and 1B.

Four reduced images (field mode)

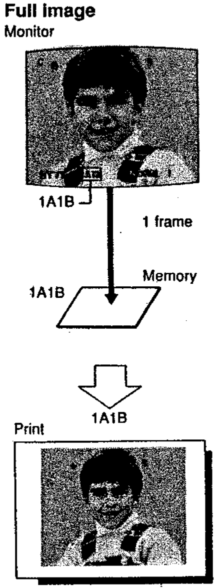


Field and frame

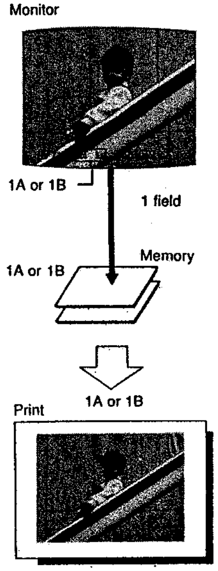
Each of the two screens made by interlaced scanning of every other video line is called a field. The two fields make up one frame.


+
→
1 field
1 field
1 frame

Full image

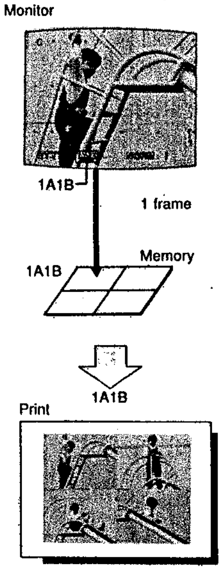

Monitor
1A1B
1 frame
1A1B
Memory
Print
1A1B

A still subject can be printed with high resolution.

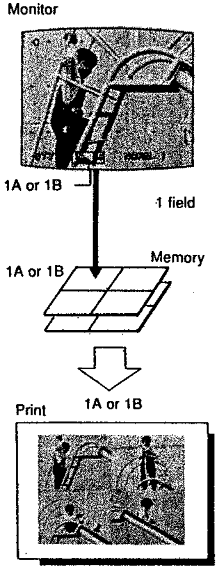

Monitor
1A or 1B
1 field
1A or 1B
Memory
Print
1A or 1B

A quickly moving subject can be printed without blur. You can store two images using 1A and 1B separately.

Four reduced images


Monitor
1A1B
1 frame
1A1B
Memory
Print
1A1B

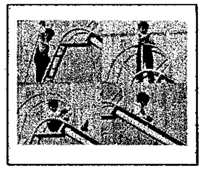
You can store and print four images, each reduced to 1/4 in size.


Monitor
1A or 1B
1 field
1A or 1B
Memory
Print
1A or 1B

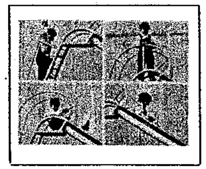
You can print a total of eight images, each reduced to 1/4 in size, by using 1A and 1B. (The resolution becomes low.)

You can print 4 reduced images with white divisions:

Without white divisions



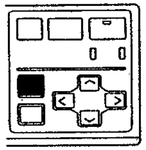
With white divisions

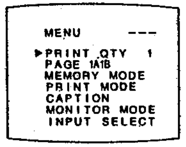


Setting the memory mode

This section shows you how to change the memory settings for a full-size image or four reduced-size images (with and without white divisions), and for the frame mode and the field mode. When you are going to print a quickly moving subject, set to the field mode. You can print the image without blur.

1 Press MENU.

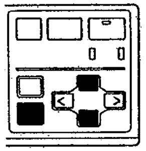


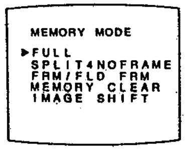


```
MENU          ---
▶PRINT QTY     1
 PAGE 1A1B
 MEMORY MODE
 PRINT MODE
 CAPTION
 MONITOR MODE
 INPUT SELECT
```

Menu appears on the screen.

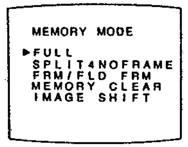
2 Move ▶ to MEMORY MODE by pressing ⋀⋁ and press EXEC.





```
MEMORY MODE
▶FULL
 SPLIT4NOFRAME
 FRM/FLD  FRM
 MEMORY CLEAR
 IMAGE SHIFT
```

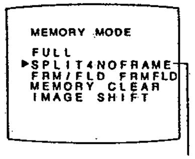
3 For a full screen, move ▶ to FULL by pressing ⋀⋁.



```
MEMORY MODE
▶FULL
 SPLIT4NOFRAME
 FRM/FLD  FRM
 MEMORY CLEAR
 IMAGE SHIFT
```

For four reduced images, move ▶ to SPLIT 4 by pressing ⋀⋁. When you want to print images without white divisions, make NO displayed in white by pressing <>. When you want to print images with white divisions, make NO displayed in blue by pressing <>.

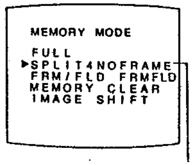
Without white divisions



```
MEMORY MODE
 FULL
▶SPLIT4NOFRAME
 FRM/FLD  FRMFLD
 MEMORY CLEAR
 IMAGE SHIFT
```

No is displayed in white.

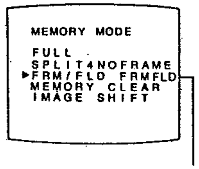
With white divisions



```
MEMORY MODE
 FULL
▶SPLIT4NOFRAME
 FRM/FLD  FRMFLD
 MEMORY CLEAR
 IMAGE SHIFT
```

No is displayed in blue.

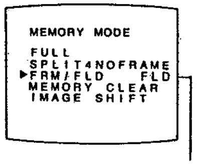
For the frame mode, move ▶ to FRM/FLD by pressing ⋀⋁ and select FRM by pressing <.



```
MEMORY MODE
 FULL
 SPLIT4NOFRAME
▶FRM/FLD  FRMFLD
 MEMORY CLEAR
 IMAGE SHIFT
```

FRM is displayed in white.

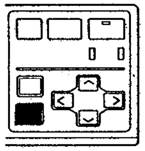
For the field mode, move ▶ to FRM/FLD by pressing ⋀⋁ and select FLD by pressing >.

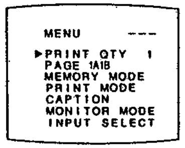


```
MEMORY MODE
 FULL
 SPLIT4NOFRAME
▶FRM/FLD     FLD
 MEMORY CLEAR
 IMAGE SHIFT
```

FLD is displayed in white.

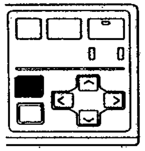
4 Press EXEC.

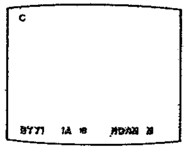




```
MENU          ---
▶PRINT QTY     1
 PAGE 1A1B
 MEMORY MODE
 PRINT MODE
 CAPTION
 MONITOR MODE
 INPUT SELECT
```

5 Press MENU.





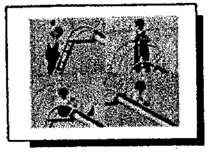
The memory mode selected in step 3. (1A in the full screen)

When you change the pages, 1A and 1B, in the field mode

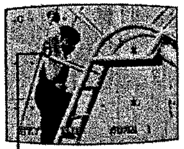
1 Press MENU.
2 Move ▶ to PAGE by pressing ⋀⋁.
3 Select 1A or 1B by pressing <>.
The selected page is displayed in white.
4 Press MENU again.

Printing four reduced images

Before storing images, select SPLIT 4 in the MEMORY MODE.

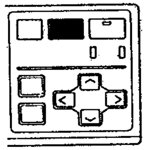


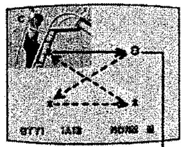
1 **Check that * is displayed on the screen.**



The white * indicates where the image will be stored.

2 **Press MEMORY IN ⇨ to store the image you want to print.**

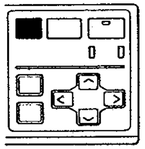


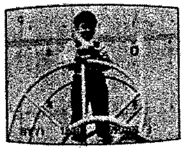


The white * moves.

If there is the image previously stored under *, the image newly stored will replace the previous one.

3 **Press SOURCE/ MEMORY to return to the playback picture.**





4 **Repeat steps 2 and 3.**

When you want to replace the stored image

Move the white * to the image you want to delete by pressing ◁▷△▽, and store the new image.

5 **Press PRINT ⎙ to make prints.**

Note

You cannot make print without storing images in memory. In a setting for four images, you can make print even if you do not store all of the four images.

Making a print with an inset

You can make prints with an inset by using four-image-printing:

1 Store the background full-screen image.
2 Change the memory mode to select SPLIT 4 (without white divisions).
3 Move the white * to select the location for the inset by pressing △▽◁▷.
4 Press MEMORY IN ⇨ to store the inset image.
5 Print.

Note:

You cannot print an image inset into a different memory.
(Example)
You cannot inset an image defined as 1A in the background full-screen image stored in 1A1B.

1-11. MAKING A VARIETY OF PRINTS

Making prints in the field mode

You can change the memory mode from frame to field to print an image stored in the frame mode. When a print is blurred in the frame mode, change the memory mode to field and print the image. You can eliminate the blur.

Both in full-image printing and in four-image printing, **you can store a different image in 1A and 1B.** After storing an image in 1A (or 1B), select the other field 1B (or 1A) with PAGE in the MENU screen to store another image. When printing, use the memory mode setting menu to select the memory with the image you want to print.

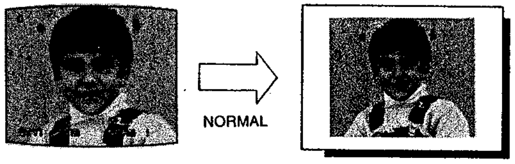
Deleting the image stored in memory

1 When printing four images, move the white * to the image you want to delete by pressing ◁▷△▽ .
2 Press MENU.
Menu appears on the screen.
3 Move ▶ to MEMORY MODE by pressing △▽ and press EXEC.
4 Move ▶ to MEMORY CLEAR by pressing △▽ and press EXEC. The deleted image becomes white.
When there is a playback image, press EXEC so that the image stored in memory appears. Press EXEC again to delete the image.
5 Press MENU again.

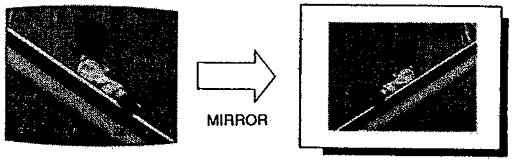
This section shows you how to make a variety of prints.

You can make a variety of prints by selecting the print method called the "print mode."
You can check the print mode with the screen messages.

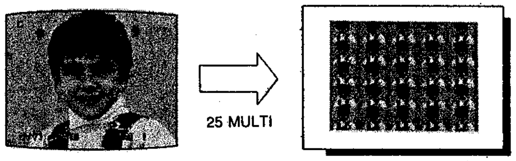
Normal print



Mirror print

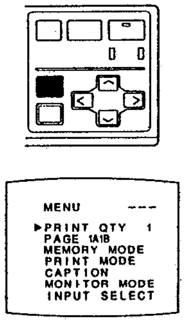


25 multi-screen print



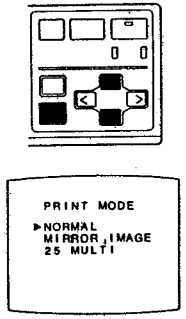
Setting the print mode

1 **Press [MENU].**


MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

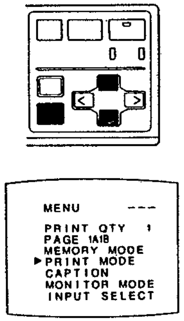
Menu appears on the screen.

2 **Move ▶ to [PRINT MODE] by pressing [∧][∨] and press [EXEC].**


PRINT MODE
▶NORMAL
MIRROR IMAGE
25 MULTI

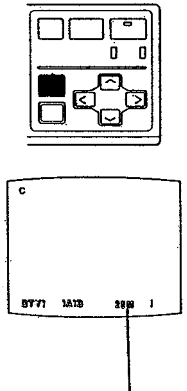
NORMAL...Normal print
MIRROR IMAGE...Mirror image print
25 MULTI...25-reduced images print

3 **Select the printing mode by pressing [∧][∨] and press [EXEC].**


MENU ---
PRINT QTY 1
PAGE 1A1B
MEMORY MODE
▶PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

Menu appears again on the screen.

4 **Press [MENU].**



The mode selected in step 3.

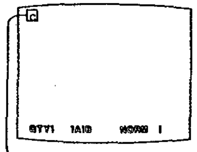
1-12. MAKING PRINTS WITH A CAPTION

Entering a caption

You can enter a line of caption in small characters such as date or comments below the image. You can input up to 48 characters. When you use a computer connected to the RS-232C interface, you can input up to 128 characters (64 characters in the wide mode).

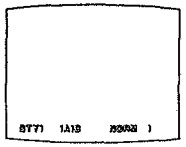
You can check the caption setting on the screen.

With a caption



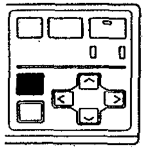
C(Caption) is displayed.

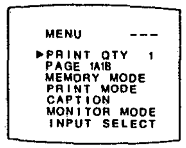
Without a caption



C(Caption) is not displayed.

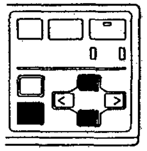
1 Press MENU.

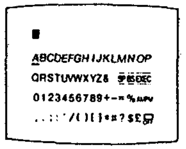



MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

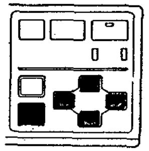
Menu appears on the screen.

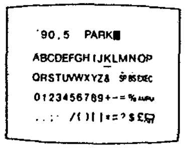
2 Move ▶ to CAPTION by pressing ∧ ∨ and press EXEC.




■
ABCDEFGHIJKLMNOP
QRSTUVWXYZ& SP BS EXEC
0123456789+−=%
..:;'/()[]*#?$£

3 Move _ below the character you want to enter by pressing ∧ ∨ < > and press EXEC.




'90.5 PARK■
ABCDEFGHIJKLMNOP
QRSTUVWXYZ& SP BS EXEC
0123456789+−=%
..:;'/()[]*=?$£

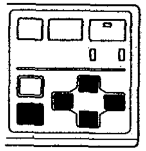
The selected character appears in the position of ■.
SP: one space

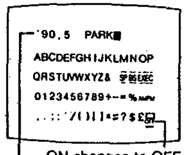
When you enter a wrong character
Move _ below BS and press EXEC.
The character to the left to ■ will be deleted.

When replacing a previously entered caption
Delete the previously entered caption. Move _ below BS and press EXEC until you delete all the characters.

4 Repeat step 3 to enter the remaining characters of the caption.

5 When the caption is displayed in blue move _ below ON by pressing ∧ ∨ < > and press EXEC.



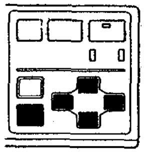

'90.5 PARK■
ABCDEFGHIJKLMNOP
QRSTUVWXYZ& SP BS EXEC
0123456789+−=%
..:;'/()[]*=?$£

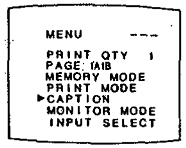
ON changes to OFF.

The color of the characters changes from blue to white

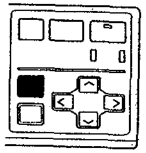
When the caption is displayed in white, it can be printed.

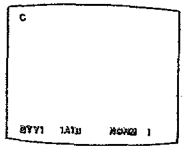
6 Move _ below EXEC by pressing ∧ ∨ < > and press EXEC.




MENU ---
PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
▶CAPTION
MONITOR MODE
INPUT SELECT

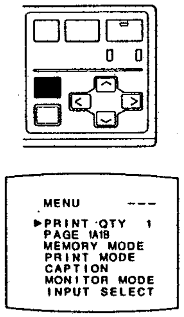
7 Press MENU.





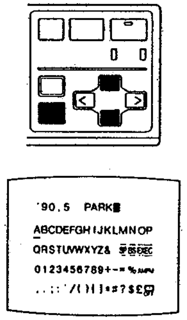
Deleting a caption

1 Press MENU.

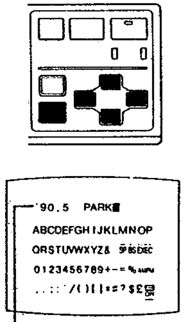

MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

Menu is displayed on the screen.

2 Move ▶ to CAPTION by pressing ⋀ ⋁ and press EXEC.


'90.5 PARK
ABCDEFGHIJKLMNOP
QRSTUVWXYZ&
0123456789+-=%
.,:;'/()!=?$£

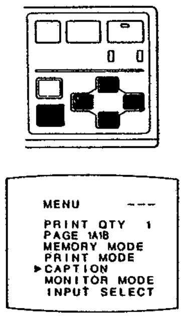
3 Move __ below OFF pressing ⋀ ⋁ < > and press EXEC.


'90.5 PARK
ABCDEFGHIJKLMNOP
QRSTUVWXYZ&
0123456789+-=%
.,:;'/()!=?$£

The entered characters become blue.

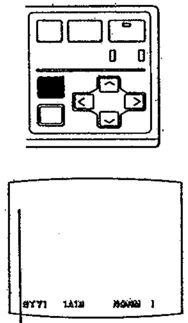
The color of the caption changes from white to blue. When the caption is displayed in blue, it is not printed so you need not delete it.

4 Move __ below EXEC by pressing ⋀ ⋁ < > and press EXEC.


MENU ---
PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
▶CAPTION
MONITOR MODE
INPUT SELECT

Menu appears on the screen.

5 Press MENU.



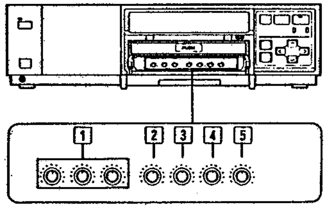
Check that C (Caption) is not displayed.

1-13. ADJUSTING PICTURE QUALITY AND COLOR

Adjusting picture quality and color of the prints

The printer is preset to produce the best picture quality with the controls for picture quality and color adjustment set at the center (reference position). If you want to change the picture quality and color, adjust them before storing and printing an image. (You cannot adjust the image stored in memory.)
Adjust the picture quality and color of an image as it is displayed on the monitor.
You cannot check the result of the sharpness adjustment on the monitor: Print the image to check the sharpness.

Function of the controls for picture quality and color adjustment



[1] **RGB fine tuning controls**
Adjusts separately the R, G, and B elements of the color. The color becomes stronger as you turn the control to the right.
R: Red
G: Green
B: Blue

[2] **SHARP (Sharpness) control**
Makes the print sharper or softer by defining or blurring the outline of the subject. The print becomes sharper as you turn the control to the right.

[3] **BRIGHT (brightness) control**
Controls the brightness (luminance) of an image. It becomes brighter as you turn the control to the right.

[4] **PICTURE control**
Makes well-balanced and instant control of the color intensity, contrast, and brightness. When you turn the control to the right, the color intensity, contrast, and brightness levels become higher.

[5] **COLOR control**
Controls the color intensity if the format of video signal is composite or separate Y/C. When you turn the control to the right, the color intensity becomes stronger.

Matching the color on the monitor to the color on the prints

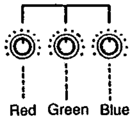
To have a correct image of a print on the monitor, adjust the color of the monitor and the printer so that the monitor produces the same color as the print. First adjust the monitor's own color controls and then store and print an image to compare the color on the monitor and that on the print.

① Adjusting the color of the monitor
In order to adjust the color of the monitor, change the signal flow so that the input video signals are directly output to the monitor without being processed in the printer's circuits. In other words, the input signal and output signal are the same.
(For example, when RGB signal is input, Y/C or video signal is not output). If not, change the connections.

1 Press [MENU].
Menu appears on the screen.
2 Move ▶ to [MONITOR MODE] by pressing △ ▽ and press [EXEC].
3 Move ▶ to [INPUT THROUGH] by pressing △ ▽ and press [EXEC].
When you select [INPUT THROUGH], the video signals do not go through electric circuits of the printer.
4 Press [MENU].
The screen messages disappear since the video signals are directly output to the monitor.
5 Adjust the color of the monitor using controls on the monitor.

② Adjusting color of the printer
In order to adjust the color on the printer, change the signal flow so that video signals flow through the electric circuits of the printer.

1 Press [MENU].
2 Move ▶ to [MONITOR MODE] by pressing △ ▽ and press [EXEC].
3 Move ▶ to [INPUT E TO E] by pressing △ ▽ and press [EXEC].
4 Press [MENU].
Menu appears on the screen.
5 Set all of the controls for RGB, picture quality and color adjustment to midlevel.
6 Store a new image (for color adjustment) in memory and print it.
7 Adjust the R,G,B fine controls in the rear panel of the printer to match the color on the monitor to the color on the print.

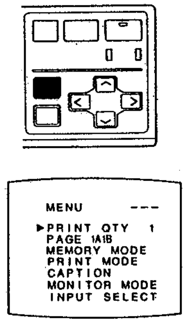


The color becomes stronger when you turn the control to the right.

1-14. ERASING SCREEN MESSAGES

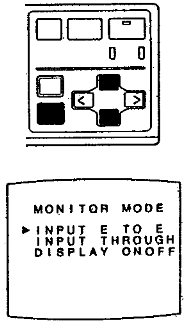
When you want to see the image that is hidden behind the screen messages (C, QTY1, 1A1B and others), you can erase the screen messages. You operate the printer in the same way, whether or not the messages appear.

1 Press MENU.

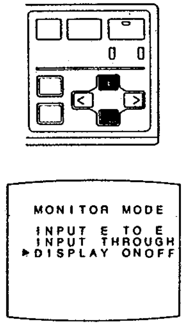

MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

Menu appears on the screen.

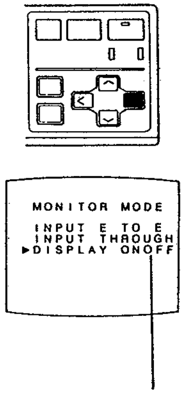
2 Move ▶ to MONITOR MODE by pressing ⋀ ⋁ and press EXEC.


MONITOR MODE
▶INPUT E TO E
INPUT THROUGH
DISPLAY ONOFF

3 Move ▶ to DISPLAY by pressing ⋀ ⋁.

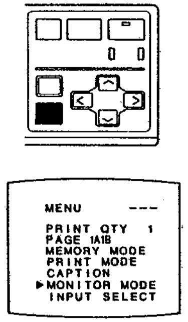

MONITOR MODE
INPUT E TO E
INPUT THROUGH
▶DISPLAY ONOFF

4 Press > and select OFF.

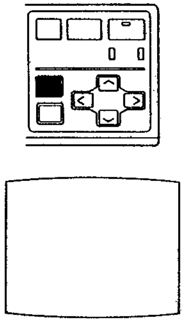

MONITOR MODE
INPUT E TO E
INPUT THROUGH
▶DISPLAY ONOFF

OFF is displayed in white.

5 Press EXEC.


MENU ---
PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
▶MONITOR MODE
INPUT SELECT

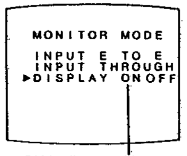
6 Press MENU.



The screen messages disappear.

Displaying screen messages

In the step 4, press < to select ON.


MONITOR MODE
INPUT E TO E
INPUT THROUGH
▶DISPLAY ONOFF

ON is displayed in white.

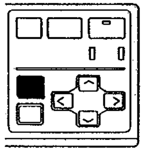
Note

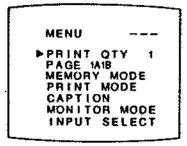
When the video signals do not flow through the electric circuits of the printer (when INPUT THROUGH is selected in the monitor mode), the screen messages do not appear even if you select ON. See page 53.

1-15. IF A BLACK LINE APPEARS IN PRINTS

Sometimes a black line appears in prints although it does not appear on the monitor. The portion where no video signal exists is printed in black. This may occur when you make prints after you connect a different video source or play back a different video software.

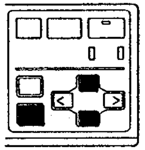
1 Press MENU.

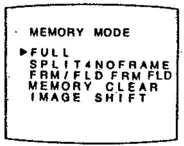



MENU ---
▶PRINT QTY 1
PAGE 1A1B
MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

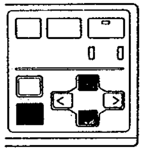
Menu appears on the screen.

2 Move ▶ to MEMORY MODE by pressing △ ▽ and press EXEC.




MEMORY MODE
▶FULL
SPLIT4NOFRAME
FRM/FLD FRM FLD
MEMORY CLEAR
IMAGE SHIFT

3 Move ▶ to IMAGE SHIFT by pressing △ ▽ and press EXEC.



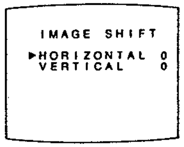
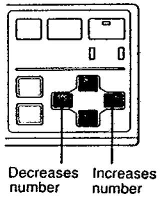


IMAGE SHIFT
▶HORIZONTAL 0
VERTICAL 0

4 Move ▶ to HORIZONTAL by pressing △ ▽ and designate the horizontal number by pressing ◁ ▷.

Make horizontal adjustment.
You can designate the numbers between –3 to +4.


Decreases number
Increases number

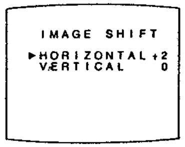


IMAGE SHIFT
▶HORIZONTAL +2
VERTICAL 0

When the black line is on the right

Use + (plus).

When the black line is on the left

Use – (minus).

When you designate +1 (–1), the image shifts to the right (left) by about 0.7mm.

5 Move ▶ to VERTICAL by pressing △ ▽ and designate the vertical number by pressing ◁ ▷.

You can designate the numbers between –2 and +2.

When the black line is at the bottom

Use + (plus).

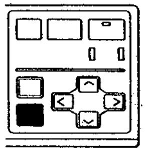
When the black line is at the top

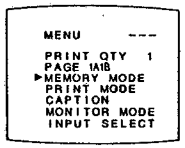
Use – (minus).

When you designate +1 (–1), the image shifts to the bottom (top) by about 0.7mm.

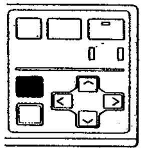
In the wide mode, vertical adjustment cannot be made.

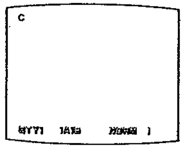
6 Press EXEC.




MENU ---
PRINT QTY 1
PAGE 1A1B
▶MEMORY MODE
PRINT MODE
CAPTION
MONITOR MODE
INPUT SELECT

7 Press MENU.





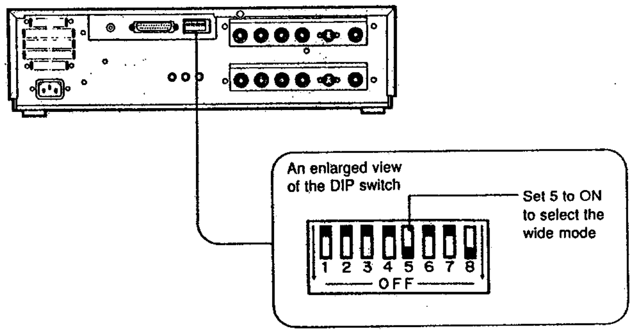
Store a new image in memory and print it to check that the black line no longer appears.
The black line in the previous image is also stored in memory. Make sure to replace that image with a new one to eliminate the black line.

1-16. USING THE WIDE MODE

You can print the portion scanned outside the regular screen. This is called the wide mode.

You cannot use the wide mode when you print four reduced images or 25 reduced images. If you select SPLIT 4 and press **MEMORY IN ⇾**, or if you select 25 MULTI and press **PRINT ⊡**, the warning message "NORMAL WIDTH" or "NORMAL WIDTH PUSH PRINT KEY" appears on the screen.

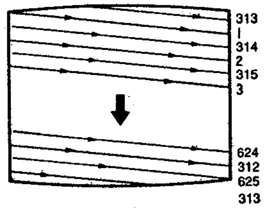
When you want to select the wide mode, turn off the power and change the setting with the DIP switch located on the rear panel of the printer.


An enlarged view of the DIP switch
Set 5 to ON to select the wide mode
1 2 3 4 5 6 7 8
OFF

Notes:
- The setting with the DIP switch remains if you change switch with the power on. When you want to change the setting, turn off the power.
- In the wide mode, you cannot shift the image vertically to eliminate the black line appearing at the top or bottom of the print.

1-17. WHY PICTURES ARE BLURRED

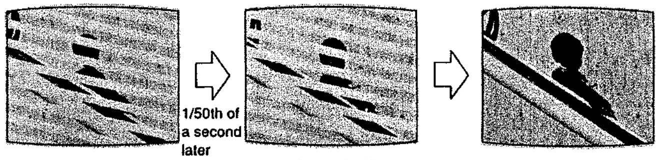
A monitor displays a video image by sending electron beams diagonally across its screen; first every other line, then it returns to the top and goes to the bottom filling in the spaces.
One scan from top to bottom is a "field". Two scans make up a "frame".



A field is drawn in 1/50th of a second.
A frame is complete in 1/25th of a second.

Video cameras record images in these half-frames, or fields. The example below illustrates how a quickly moving subject is recorded in two parts — once from top to bottom with alternate gaps, and then again from the top to the bottom filling in every other line. If the subject moves within 1/50th of a second from the first scanning, the second scanning will be off-set.
When 1A and 1B, each corresponding to one of the two fields of the stored image, are overlapped in the frame setting, 1A1B, the image will appear jittery on the monitor and blurred when printed. When you print a quickly moving subject using one field of the memory, however, the subject will not be blurred.

First scanning **Second scanning**
(The subject has moved.)



Stored in 1A Stored in 1B 1A + 1B

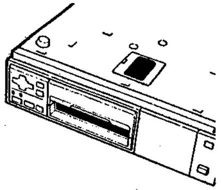
1-18. ERROR MESSAGES

When the print paper runs out or jams or other troubles occur, an error message stating the problem will appear on the monitor. When the error message states the problems arising from the printer mechanism including the print paper and ink ribbon cassette, the red ALARM light will blink. Follow the messages and do the procedures to rectify the error.

BOTTOM HATCH OPEN

You cannot print.
The bottom hatch of the printer is open.

Close the hatch firmly.



FEED ERROR

You cannot print.
The print paper is jamming.

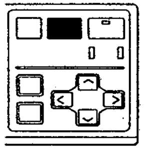
Remove the top hatch or rear hatch of the printer and remove the stuck paper.
Refer to "When the print paper jams" on page 66.

INCORRECT MEMORY

(Appearing for several seconds)

You cannot print.
An image is not stored in memory or the memory is selected incorrectly.

When no image is stored in memory, press MEMORY IN ⊕ to store an image.



When the memory is selected incorrectly, select the correct memory in the memory mode.

```
MEMORY MODE
▶FULL
 SPLIT4NOFRAME
 FRM/FLD FRM
 MEMORY CLEAR
 IMAGE SHIFT
```

NO PAPER

You cannot print.
The paper tray is empty or the paper tray is not properly inserted.

Fill the paper tray with print paper and insert the tray firmly.

NO RIBBON CASSETTE

You cannot print.
Ink ribbon cassette is not securely in place.

Insert the ink ribbon cassette firmly.

NORMAL WIDTH

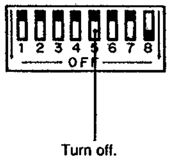
(Appearing for several seconds)

The wide mode is selected. (See page 58.)

You cannot use the wide mode when storing four reduced images or printing 25 images. Four images are stored in the normal width.
(When the message "NORMAL WIDTH PUSH PRINT KEY" appears, press PRINT ◻ again to print in the normal width while the message is on. If you want to stop printing, press MENU to erase the message.)

To use the wide mode, change the memory mode or print mode.

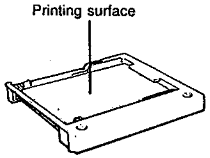
To quit the wide mode, change the setting of the DIP switch.



PLACE PAPER PRINT SIDE UP

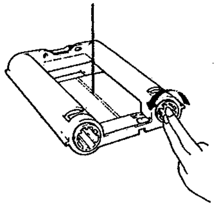
You cannot print.
The print paper is upside-down in the paper tray or the print paper does not match the ink ribbon cassette.

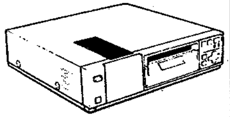
Place the print paper correctly so that the printing surface (the side without marks) is facing up.



Use the correct combination of the print paper and ink ribbon cassette.
Rewind the ink ribbon cassette inserted in the printer.

Turn the ribbon cassette until the black line is positioned between the two rolls.



PROCESS ERROR	RIBBON ERROR	TOP HATCH OPEN	CHECK RIBBON SETTING
You cannot print. The print paper is jamming.	**You cannot print. The ink ribbon cassette has been completely used.**	**You cannot print. The top hatch of the printer is open.**	**You cannot print. The ink ribbon cassette is not securely in place.**
Remove the top hatch of the printer and remove the stuck paper.	Replace the used ribbon with a new one.	Close the hatch firmly. 	Insert the ink ribbon cassette to the bottom and press it firmly until the print paper is ejected.

Caution

Turn off the power switch before servicing or cleaning paper jam.

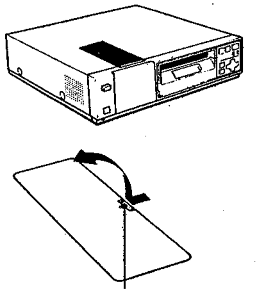
When the print paper jams

1 **Open the panel and remove the ink ribbon cassette.**

2 **Remove the top hatch of the printer and take out the stuck paper. If there is no paper stuck at that position, remove the bottom hatch to remove the stuck paper.**

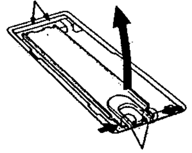
Removing the top hatch to take out the stuck paper

1



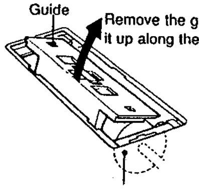
Remove the hatch, pushing this part toward ◄.

2 Remove the cover from the slits.



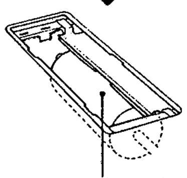
Push in the tabs and pull up the cover.

3



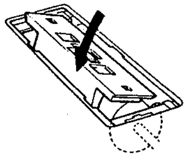
Remove the guide by pulling it up along the roller.

4



If the paper is wound around the roller, take out the paper.

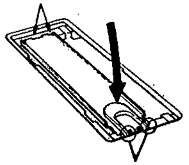
5



Fit in the guide firmly along the slit.

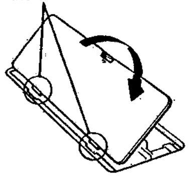
1-19. TROUBLESHOOTING

6 Fit in the cover firmly along the slits.



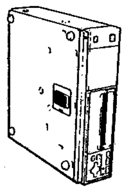
Press in the tabs and release then so that the cover clicks in place.

7 Fix in the hatch firmly along the slit.



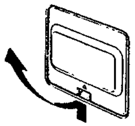
Close the hatch so that it clicks in place.

Removing the bottom hatch to take out the stuck paper



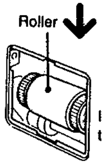
When you stand the printer, face the right side downwards.

1



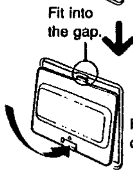
Pull up the hatch to the ▲ direction and remove it.

2



If you find the paper, take it out

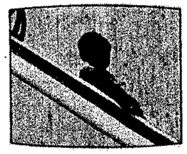
3



Reinsert the hatch so that it clicks in place.

3 **Remove the paper tray and check that the print paper is placed properly.**

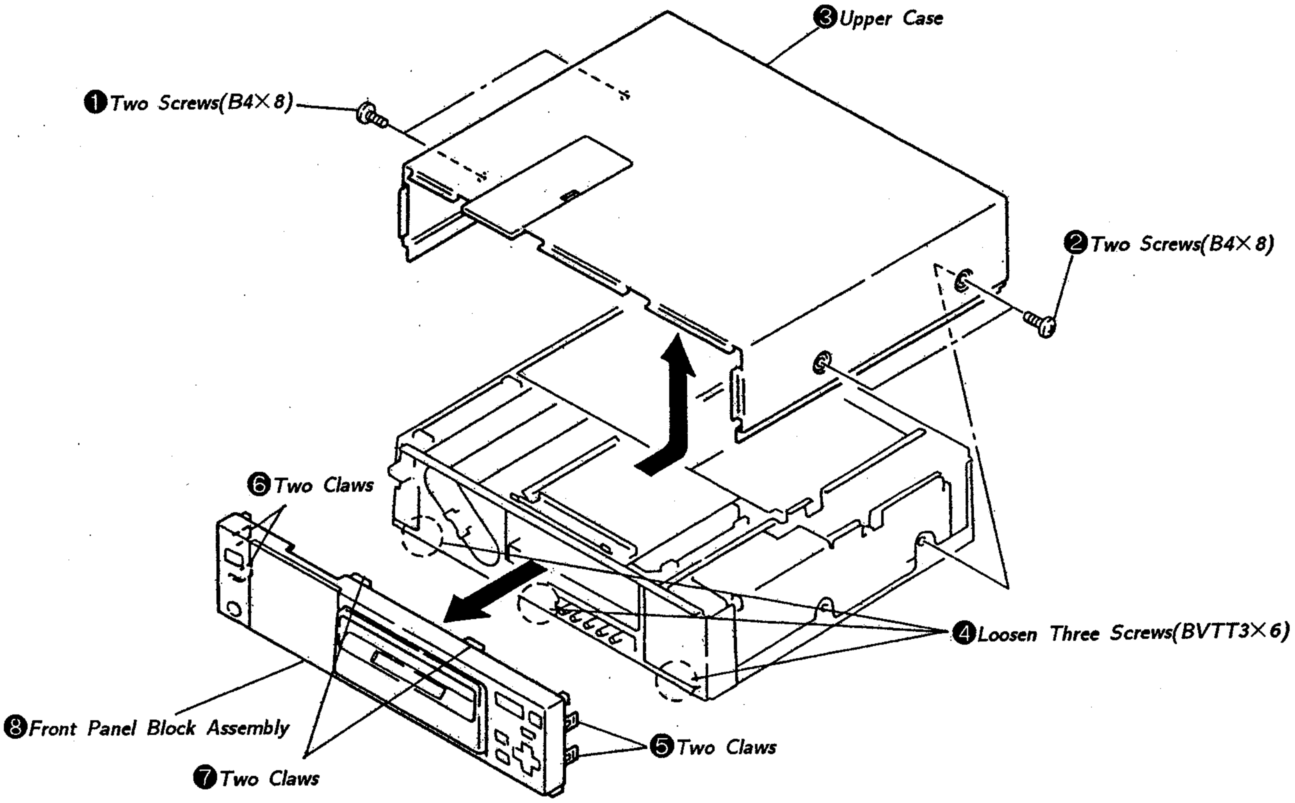
4 **Load the ink ribbon cassette and turn on the power.**

Symptom	**The printer does not print**	**The picture is blurred** 	**A black line appears on the print**
Causes and remedies	An error message appears on the display. See "Error Messages" on page 62. Check that the power is turned on and that the connections have been properly made. See page 16 for correct connections.	Switch to the field mode and print the image. (See page 38.)	See "If a Black Line Appears in Prints" on page 56 and adjust the image. Store a new image and print it.

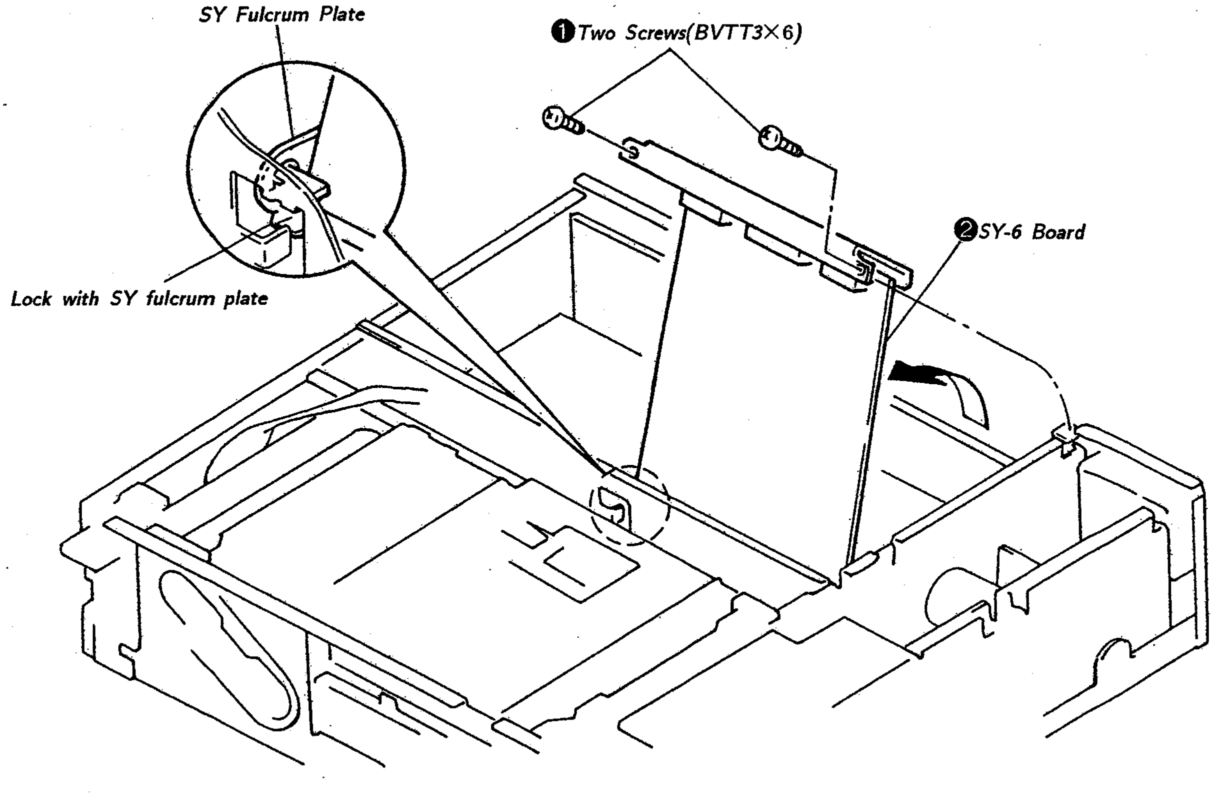
Symptom	**25 reduced images cannot be printed**	**The images cannot be stored in the wide mode**	
Causes and remedies	Check if the wide mode is selected. See "Using the Wide Mode" on page 58.	You cannot store four reduced images in the wide mode. Although you select the wide mode, four reduced images are stored in the normal width.	

SECTION 2
DISASSEMBLY

2-1. EXTERIOR REMOVAL

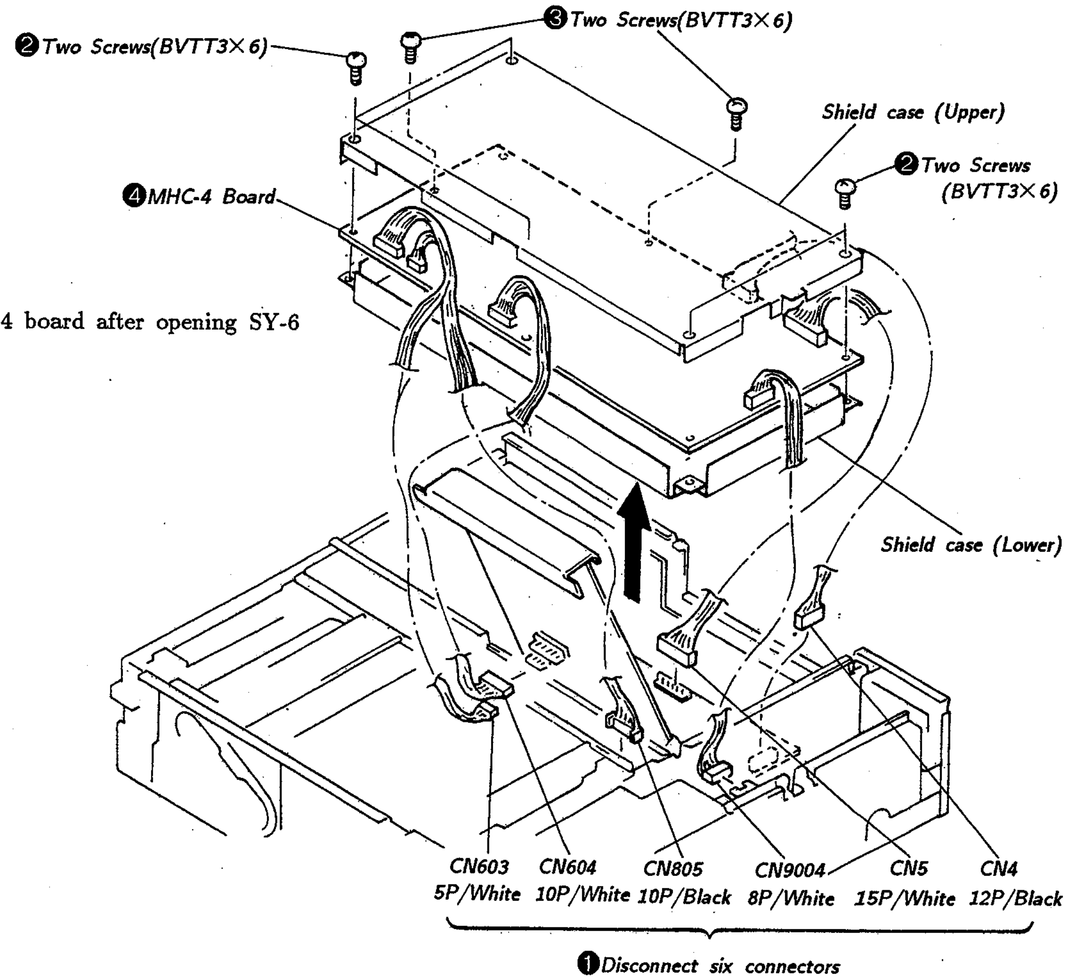

③Upper Case
①Two Screws(B4×8)
②Two Screws(B4×8)
⑥Two Claws
④Loosen Three Screws(BVTT3×6)
⑧Front Panel Block Assembly
⑤Two Claws
⑦Two Claws

2-2. SY-6 BOARD REMOVAL

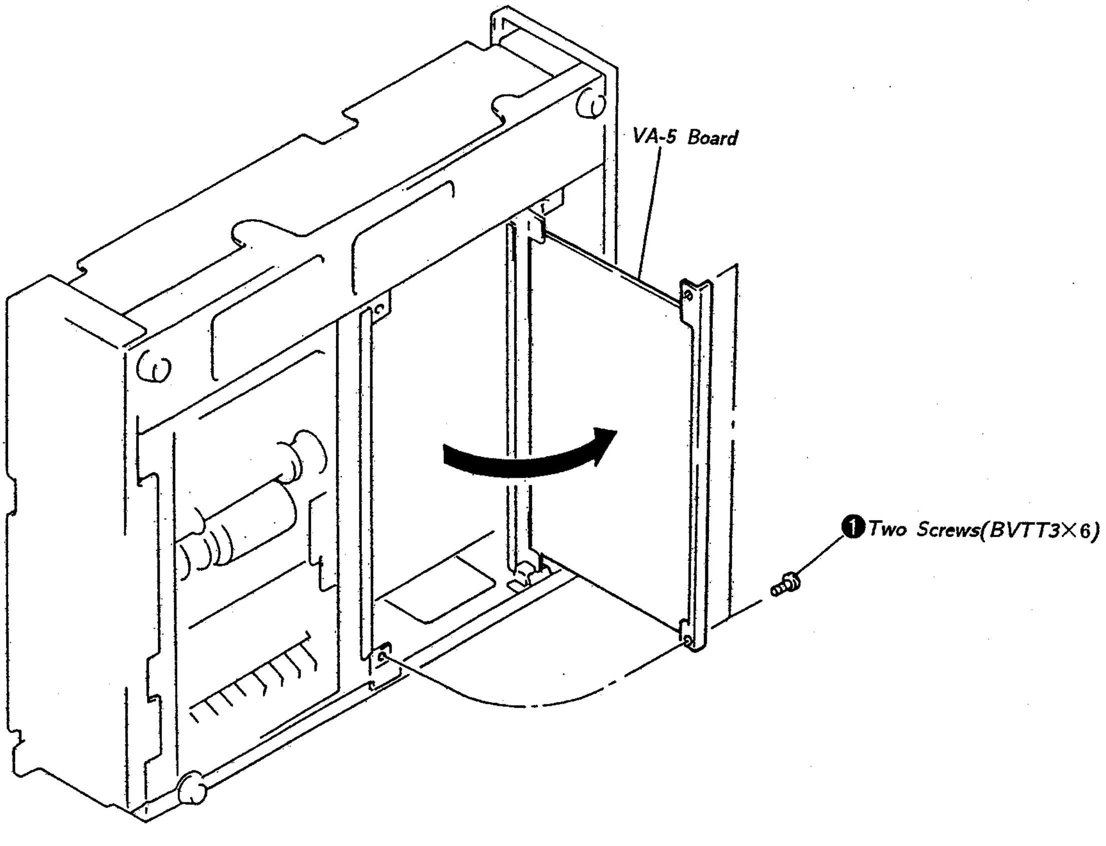

SY Fulcrum Plate
①Two Screws(BVTT3×6)
②SY-6 Board
Lock with SY fulcrum plate

2-3. MHC-4 BOARD REMOVAL

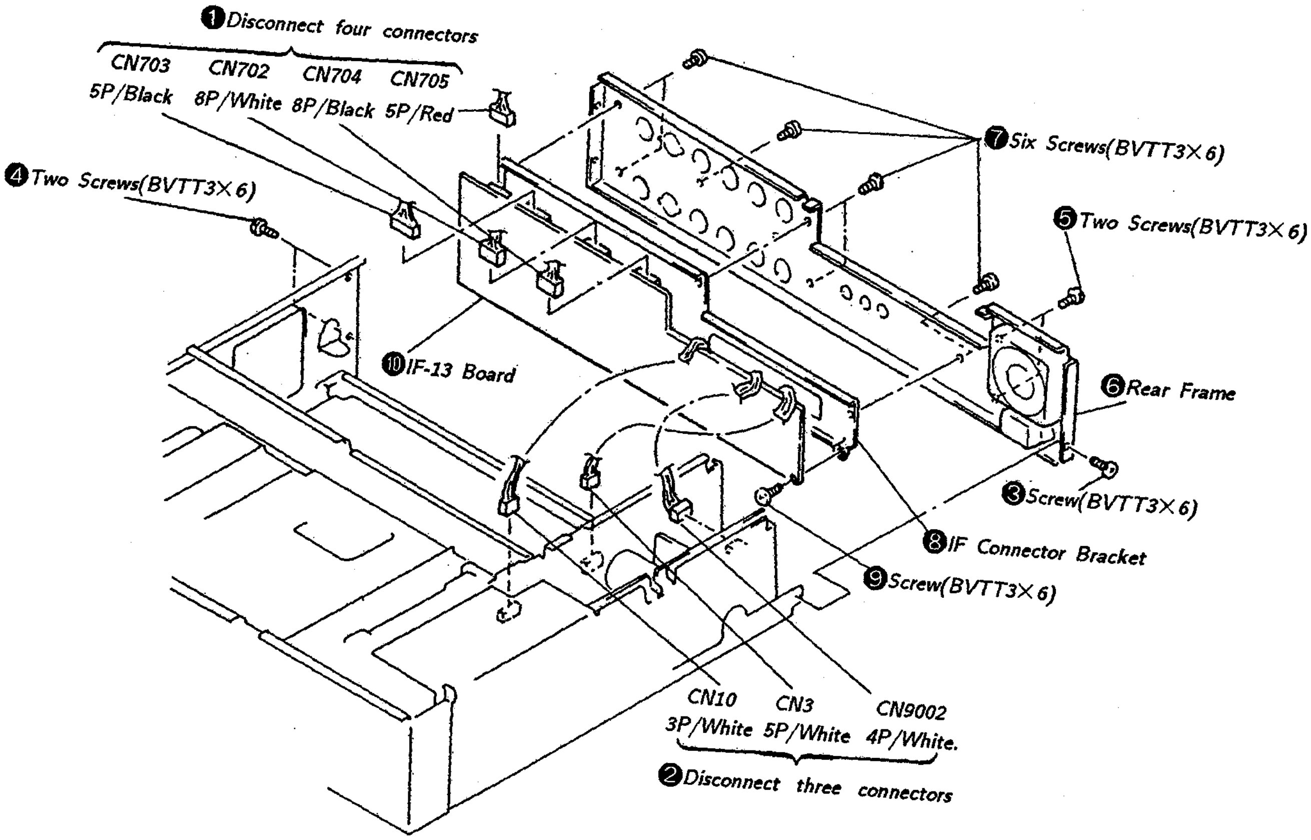
Note: Remove MHC-4 board after opening SY-6 board.


❷Two Screws(BVTT3×6)
❸Two Screws(BVTT3×6)
Shield case (Upper)
❷Two Screws (BVTT3×6)
❹MHC-4 Board
Shield case (Lower)
CN603 5P/White
CN604 10P/White
CN805 10P/Black
CN9004 8P/White
CN5 15P/White
CN4 12P/Black
❶Disconnect six connectors

2-4. VA-5 BOARD REMOVAL

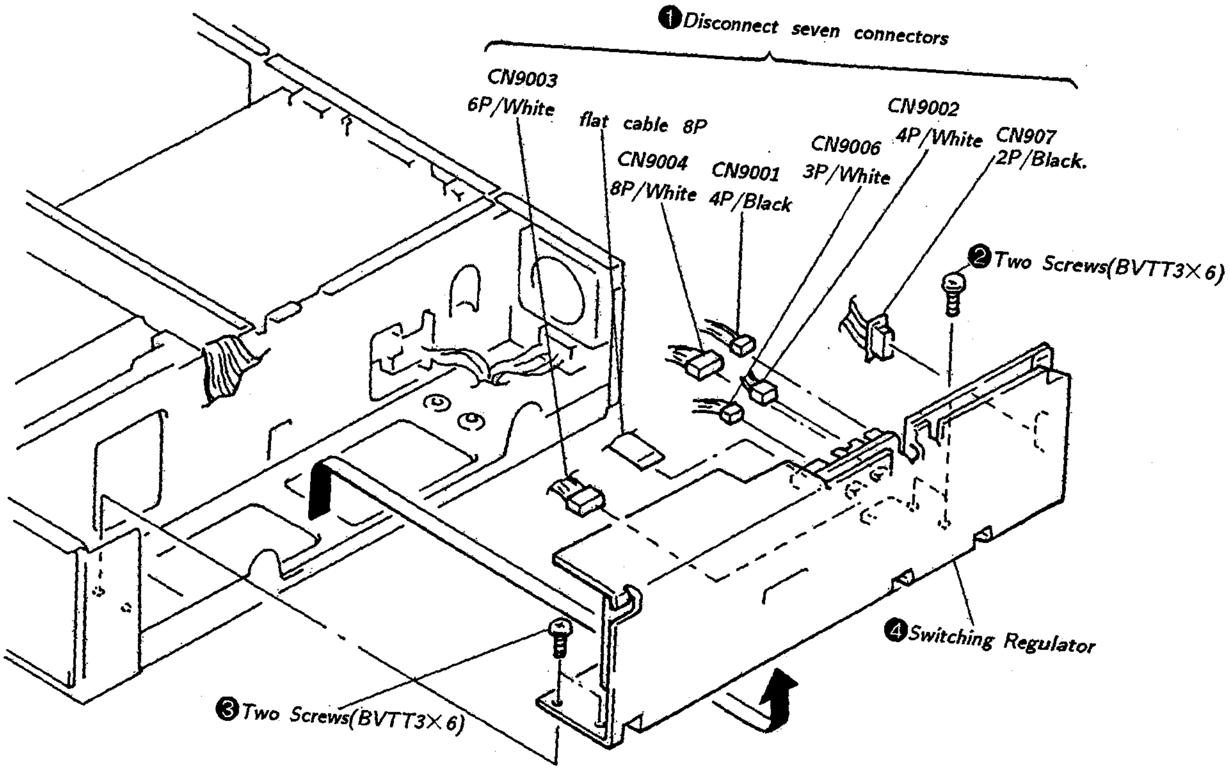

VA-5 Board
❶Two Screws(BVTT3×6)

2-5. IF-13 BOARD REMOVAL



❶Disconnect four connectors
CN703 5P/Black
CN702 8P/White
CN704 8P/Black
CN705 5P/Red
❹Two Screws(BVTT3×6)
❼Six Screws(BVTT3×6)
❺Two Screws(BVTT3×6)
❿IF-13 Board
❻Rear Frame
❸Screw(BVTT3×6)
❽IF Connector Bracket
❾Screw(BVTT3×6)
CN10 3P/White
CN3 5P/White
CN9002 4P/White.
❷Disconnect three connectors

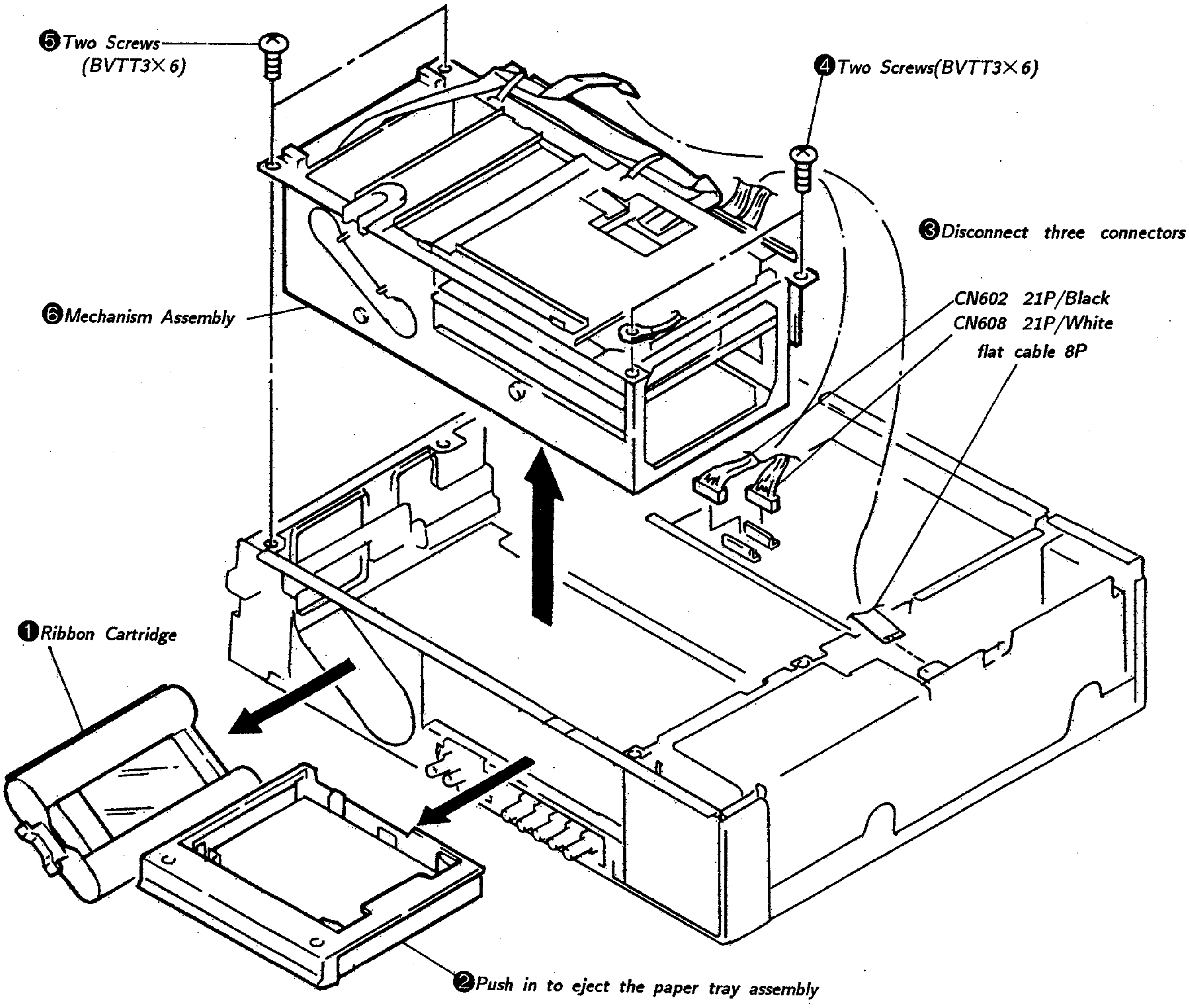
2-6. SWITCHING REGULATOR REMOVAL



❶Disconnect seven connectors
CN9003 6P/White
flat cable 8P
CN9004 8P/White
CN9001 4P/Black
CN9006 3P/White
CN9002 4P/White
CN907 2P/Black.
❷Two Screws(BVTT3×6)
❹Switching Regulator
❸Two Screws(BVTT3×6)

2-7. MECHANISM ASSEMBLY REMOVAL

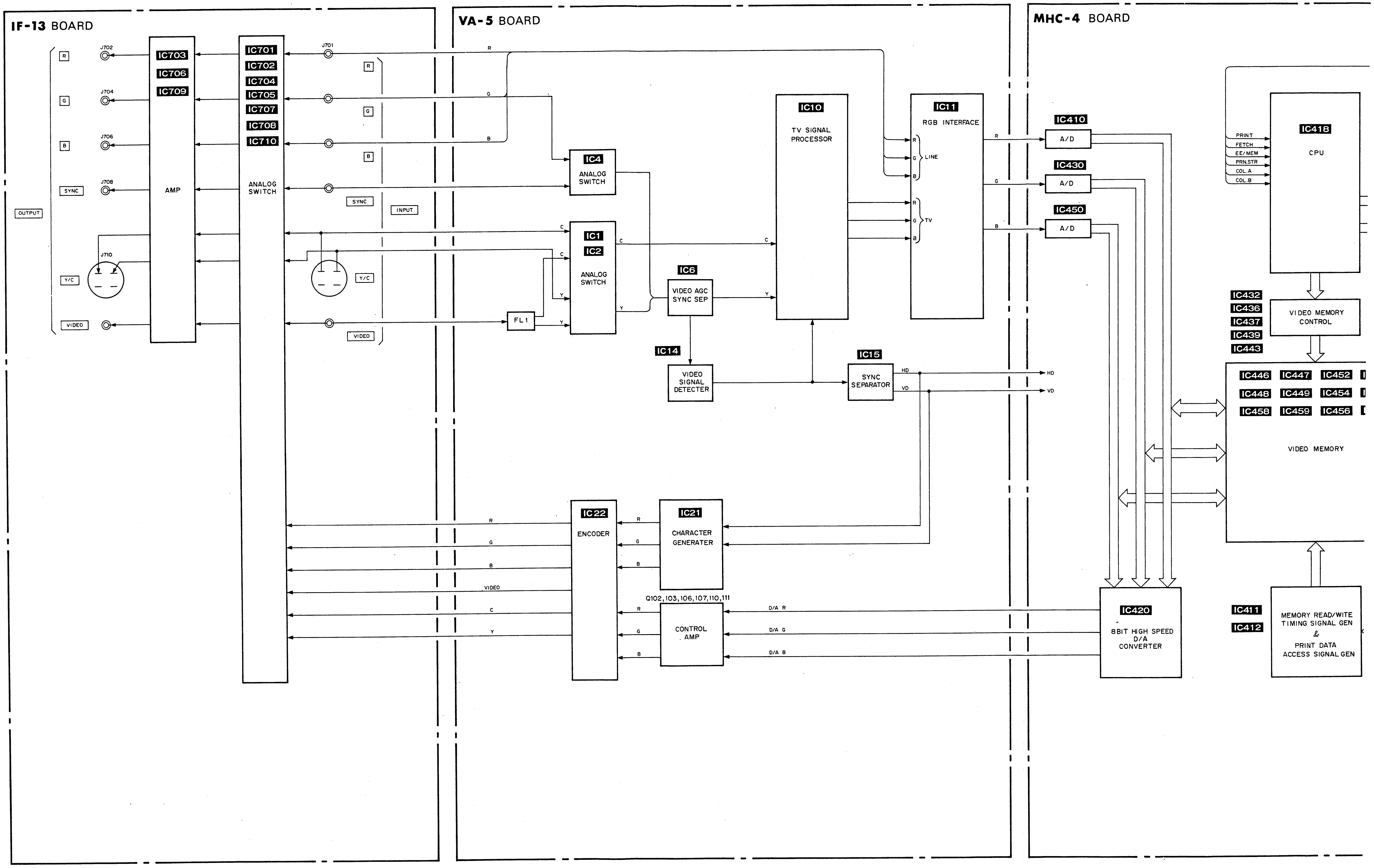
Note : Remove Mechanism assembly after removing
Front panel assembly

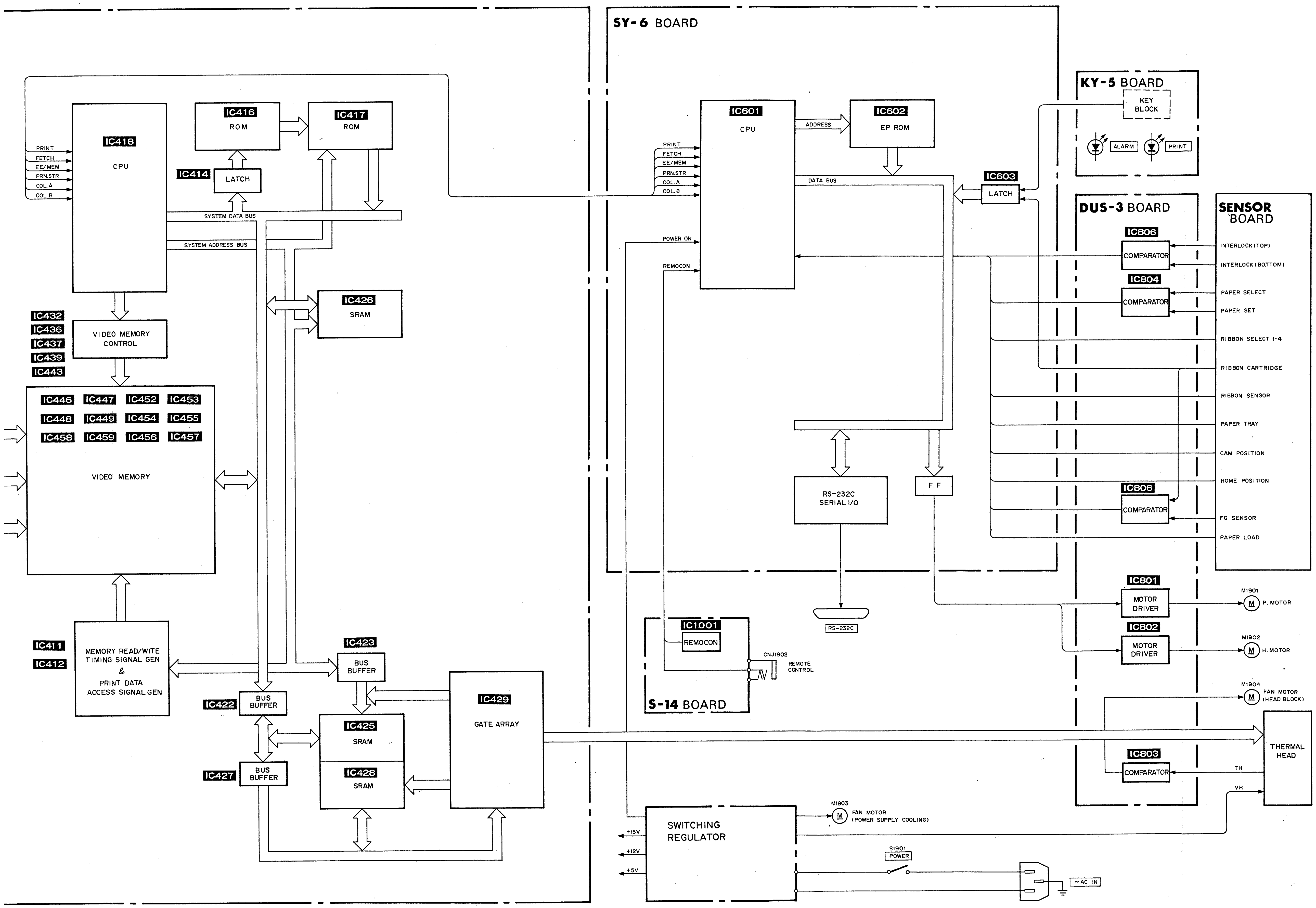


❺Two Screws
(BVTT3×6)
❹Two Screws(BVTT3×6)
❸Disconnect three connectors
CN602 21P/Black
CN608 21P/White
flat cable 8P
❻Mechanism Assembly
❶Ribbon Cartridge
❷Push in to eject the paper tray assembly

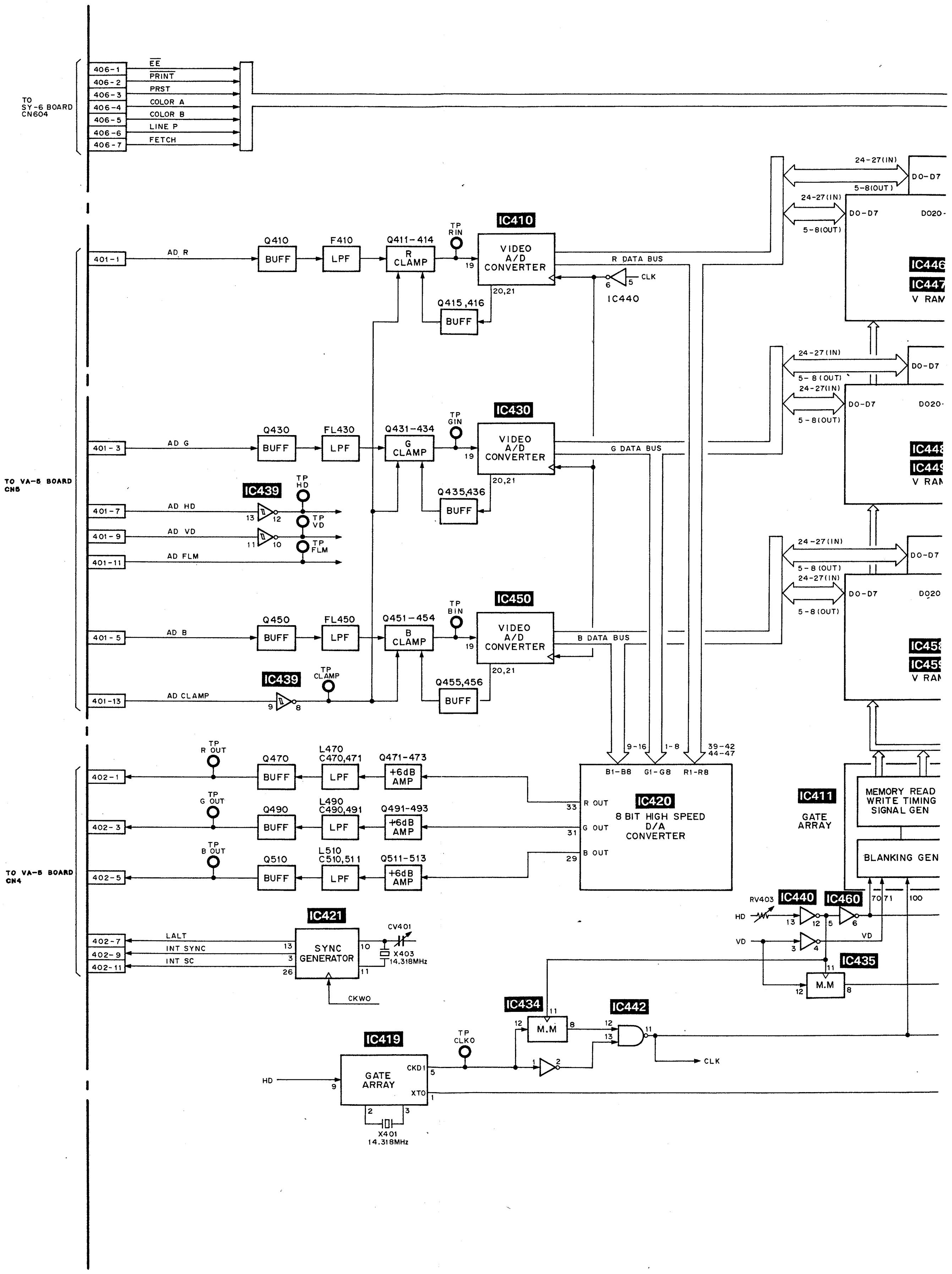
SECTION 3
DIAGRAMS

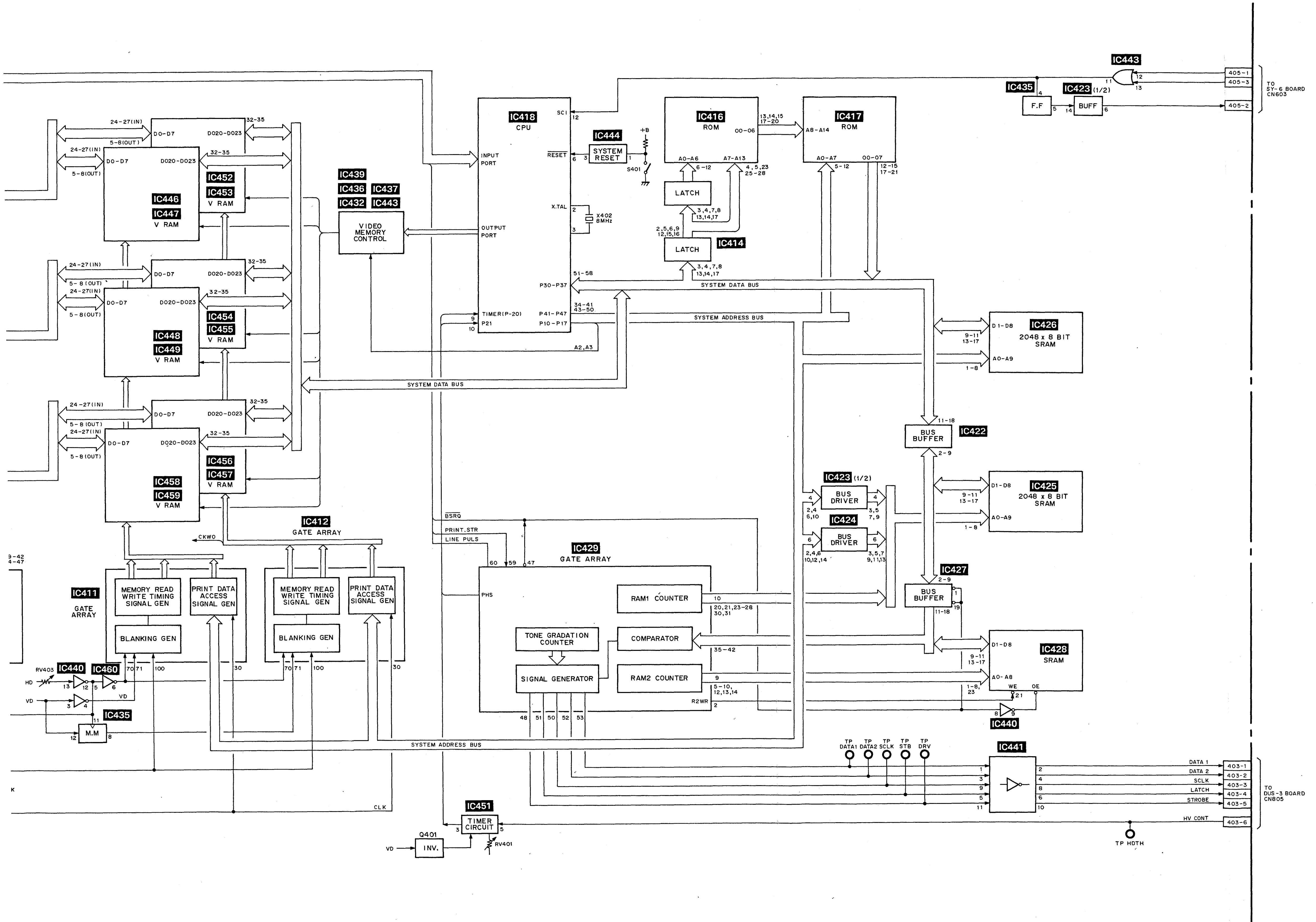
3-1. BLOCK DIAGRAM


IF-13 BOARD
OUTPUT
R
G
B
SYNC
Y/C
VIDEO
J702
J704
J706
J708
J710
IC703
IC706
IC709
AMP
IC701
IC702
IC704
IC705
IC707
IC708
IC710
ANALOG SWITCH
J701
INPUT
VA-5 BOARD
IC4
ANALOG SWITCH
IC1
IC2
ANALOG SWITCH
FL1
IC6
VIDEO AGC SYNC SEP
IC14
VIDEO SIGNAL DETECTER
IC10
TV SIGNAL PROCESSOR
IC11
RGB INTERFACE
LINE
TV
IC15
SYNC SEPARATOR
HD
VD
C
Y
IC22
ENCODER
IC21
CHARACTER GENERATER
Q102, 103, 106, 107, 110, 111
CONTROL AMP
D/A R
D/A G
D/A B
MHC-4 BOARD
IC410
A/D
IC430
A/D
IC450
A/D
IC420
8BIT HIGH SPEED D/A CONVERTER
IC418
CPU
PRINT
FETCH
EE/MEM
PRN.STR
COL.A
COL.B
IC432
IC436
IC437
IC439
IC443
VIDEO MEMORY CONTROL
IC446
IC447
IC452
IC448
IC449
IC454
IC458
IC459
IC456
VIDEO MEMORY
IC411
IC412
MEMORY READ/WITE TIMING SIGNAL GEN & PRINT DATA ACCESS SIGNAL GEN


SY-6 BOARD
IC418
CPU
PRINT
FETCH
EE/MEM
PRN.STR
COL.A
COL.B
IC416
ROM
IC417
ROM
IC414
LATCH
SYSTEM DATA BUS
SYSTEM ADDRESS BUS
IC426
SRAM
IC432
IC436
IC437
IC439
IC443
VIDEO MEMORY CONTROL
IC446
IC447
IC452
IC453
IC448
IC449
IC454
IC455
IC458
IC459
IC456
IC457
VIDEO MEMORY
IC411
IC412
MEMORY READ/WITE TIMING SIGNAL GEN & PRINT DATA ACCESS SIGNAL GEN
IC423
BUS BUFFER
IC422
BUS BUFFER
IC427
BUS BUFFER
IC425
SRAM
IC428
SRAM
IC429
GATE ARRAY
IC601
CPU
POWER ON
REMOCON
ADDRESS
IC602
EP ROM
DATA BUS
IC603
LATCH
RS-232C SERIAL I/O
F.F
RS-232C
IC1001
REMOCON
CNJ1902
REMOTE CONTROL
S-14 BOARD
KY-5 BOARD
KEY BLOCK
ALARM
PRINT
DUS-3 BOARD
IC806
COMPARATOR
IC804
COMPARATOR
IC806
COMPARATOR
IC801
MOTOR DRIVER
IC802
MOTOR DRIVER
IC803
COMPARATOR
SENSOR BOARD
INTERLOCK (TOP)
INTERLOCK (BOTTOM)
PAPER SELECT
PAPER SET
RIBBON SELECT 1-4
RIBBON CARTRIDGE
RIBBON SENSOR
PAPER TRAY
CAM POSITION
HOME POSITION
FG SENSOR
PAPER LOAD
M1901
M
P. MOTOR
M1902
M
H. MOTOR
M1904
M
FAN MOTOR (HEAD BLOCK)
THERMAL HEAD
TH
VH
SWITCHING REGULATOR
+15V
+12V
+5V
M1903
M
FAN MOTOR (POWER SUPPLY COOLING)
S1901
POWER
~AC IN

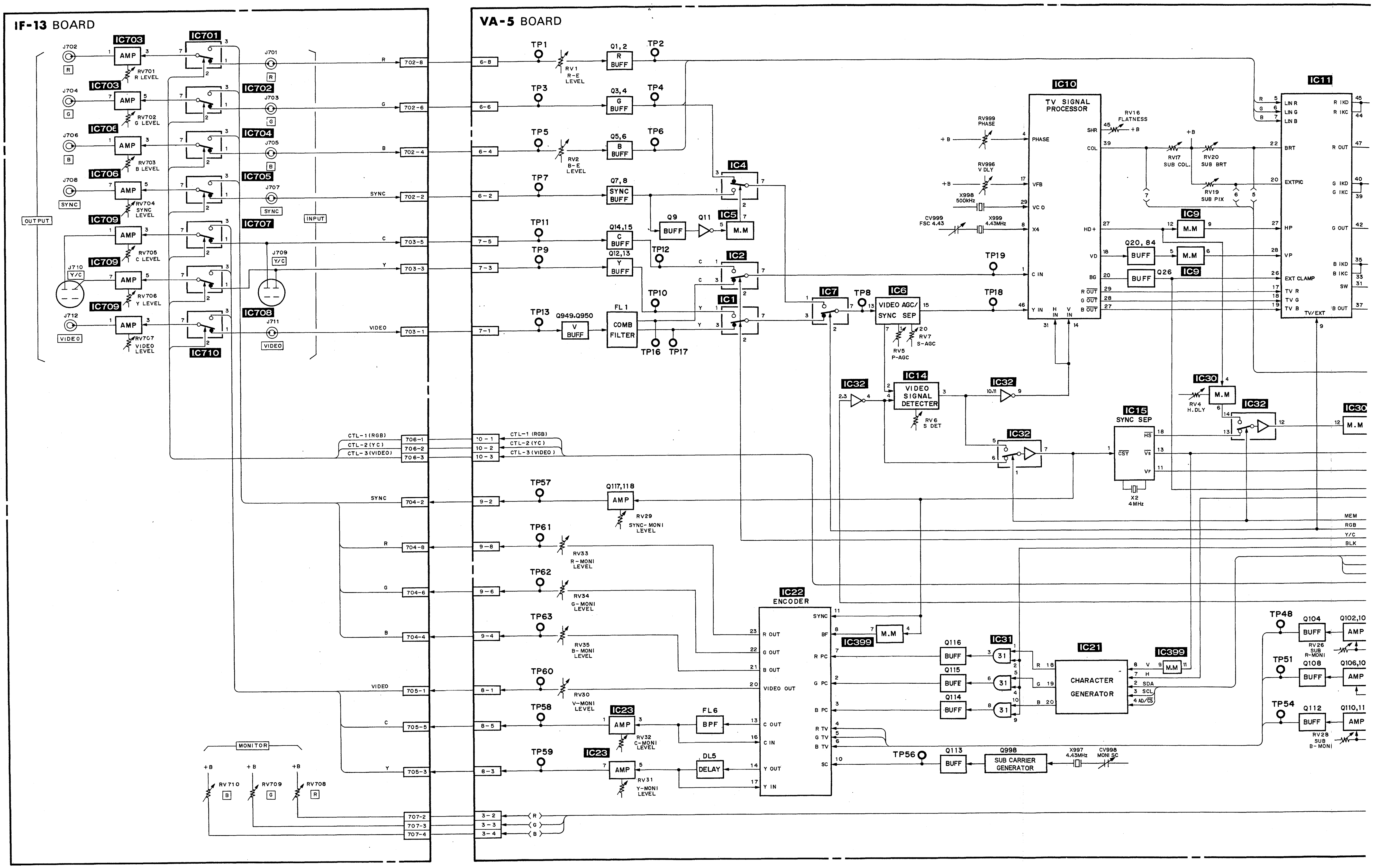
3-2. VIDEO (ANALOG) BLOCK DIAGRAM

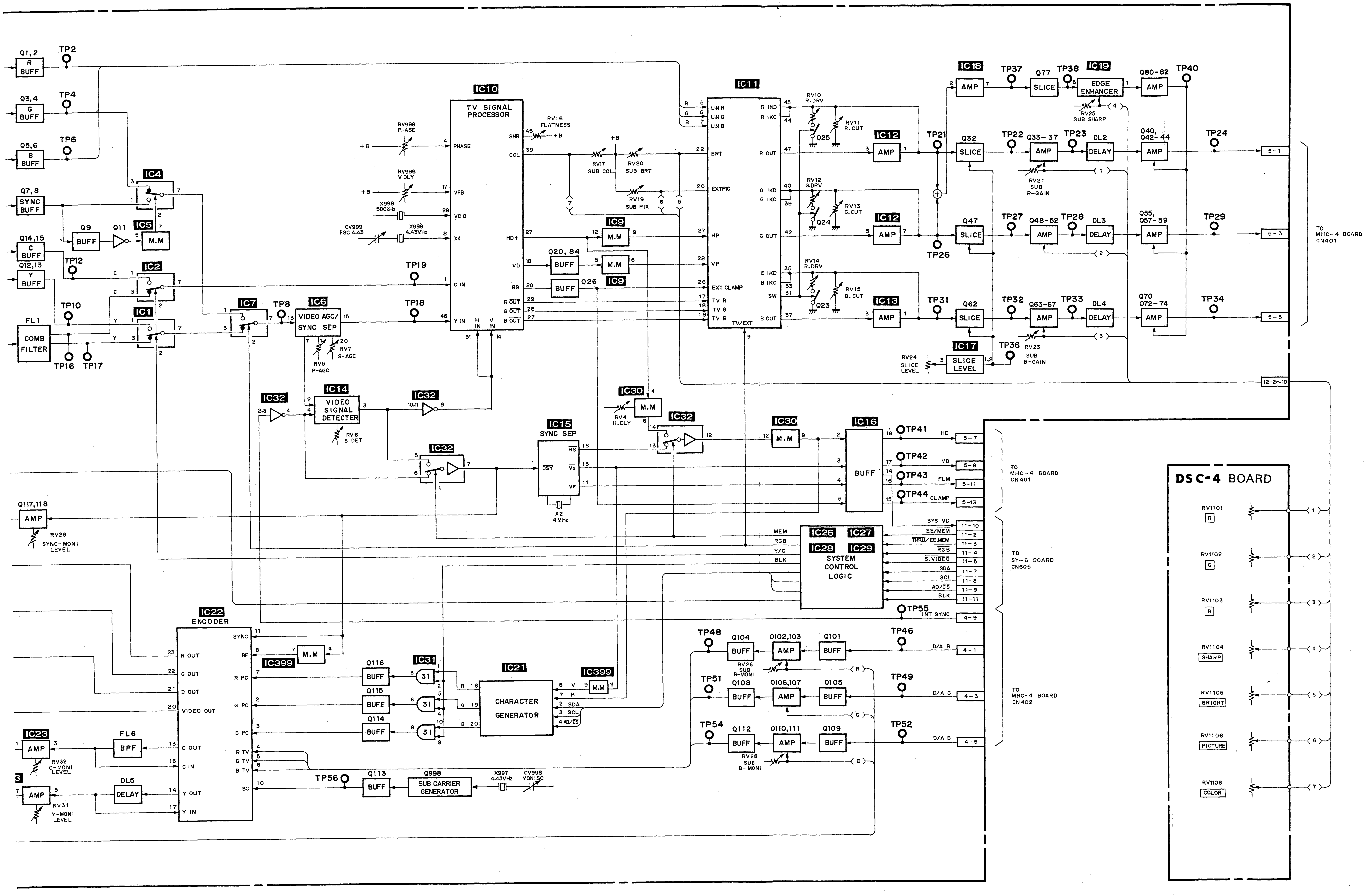

TO SY-6 BOARD CN604
406-1
406-2
406-3
406-4
406-5
406-6
406-7
EE
PRINT
PRST
COLOR A
COLOR B
LINE P
FETCH
TO VA-5 BOARD CN5
401-1
AD R
Q410
BUFF
F410
LPF
Q411-414
R CLAMP
TP RIN
IC410
VIDEO A/D CONVERTER
19
20,21
Q415,416
BUFF
R DATA BUS
CLK
IC440
401-3
AD G
Q430
BUFF
FL430
LPF
Q431-434
G CLAMP
TP GIN
IC430
VIDEO A/D CONVERTER
Q435,436
BUFF
G DATA BUS
IC439
TP HD
401-7
AD HD
401-9
AD VD
401-11
AD FLM
TP VD
TP FLM
401-5
AD B
Q450
BUFF
FL450
LPF
Q451-454
B CLAMP
TP BIN
IC450
VIDEO A/D CONVERTER
Q455,456
BUFF
B DATA BUS
401-13
AD CLAMP
TP CLAMP
24-27(IN)
5-8(OUT)
D0-D7
D020-
IC446
IC447
V RAM
IC448
IC449
IC458
IC459
TO VA-5 BOARD CN4
402-1
TP R OUT
Q470
BUFF
L470 C470,471
LPF
Q471-473
+6dB AMP
402-3
TP G OUT
Q490
L490 C490,491
Q491-493
402-5
TP B OUT
Q510
L510 C510,511
Q511-513
9-16
1-8
39-42 44-47
B1-B8
G1-G8
R1-R8
IC420
8 BIT HIGH SPEED D/A CONVERTER
R OUT
G OUT
B OUT
33
31
29
IC411
GATE ARRAY
MEMORY READ WRITE TIMING SIGNAL GEN
BLANKING GEN
402-7
402-9
402-11
LALT
INT SYNC
INT SC
IC421
SYNC GENERATOR
CV401
X403 14.318MHz
CKWO
RV403
HD
VD
IC440
IC460
IC435
M.M
IC434
M.M
IC442
CLK
TP CLKO
IC419
GATE ARRAY
CKO1
XTO
X401 14.318MHz


IC418
CPU
SCI
INPUT PORT
RESET
X.TAL
OUTPUT PORT
P30-P37
TIMER(P-20)
P21
P41-P47
P10-P17
IC444
SYSTEM RESET
S401
+B
X402 8MHz
IC416
ROM
A0-A6
A7-A13
O0-O6
LATCH
LATCH
IC414
IC417
ROM
A8-A14
A0-A7
O0-O7
IC443
IC435
F.F
IC423 (1/2)
BUFF
405-1
405-3
405-2
TO SY-6 BOARD CN603
IC439
IC436
IC437
IC432
IC443
VIDEO MEMORY CONTROL
IC446
IC447
V RAM
IC452
IC453
V RAM
IC448
IC449
V RAM
IC454
IC455
V RAM
IC458
IC459
V RAM
IC456
IC457
V RAM
D0-D7
D020-D023
24-27(IN)
5-8(OUT)
32-35
SYSTEM DATA BUS
SYSTEM ADDRESS BUS
A2,A3
IC426
2048 x 8 BIT SRAM
D1-D8
A0-A9
IC422
BUS BUFFER
IC423 (1/2)
BUS DRIVER
IC424
BUS DRIVER
IC425
2048 x 8 BIT SRAM
IC427
BUS BUFFER
IC428
SRAM
A0-A8
WE
OE
IC440
IC412
GATE ARRAY
CKWO
IC411
GATE ARRAY
MEMORY READ WRITE TIMING SIGNAL GEN
PRINT DATA ACCESS SIGNAL GEN
BLANKING GEN
MEMORY READ WRITE TIMING SIGNAL GEN
PRINT DATA ACCESS SIGNAL GEN
BLANKING GEN
RV403
HD
VD
IC440
IC460
IC435
M.M
IC429
GATE ARRAY
BSRQ
PRINT.STR
LINE PULS
PHS
RAM1 COUNTER
TONE GRADATION COUNTER
COMPARATOR
SIGNAL GENERATOR
RAM2 COUNTER
R2WR
CLK
IC451
TIMER CIRCUIT
RV401
Q401
INV.
VD
TP DATA1
TP DATA2
TP SCLK
TP STB
TP DRV
IC441
DATA 1
DATA 2
SCLK
LATCH
STROBE
HV CONT
403-1
403-2
403-3
403-4
403-5
403-6
TO DUS-3 BOARD CN805
TP HDTH

VIDEO (DIGITAL) BLOCKDIAGRAM

3-3. VIDEO (DIGITAL) BLOCK DIAGRAM

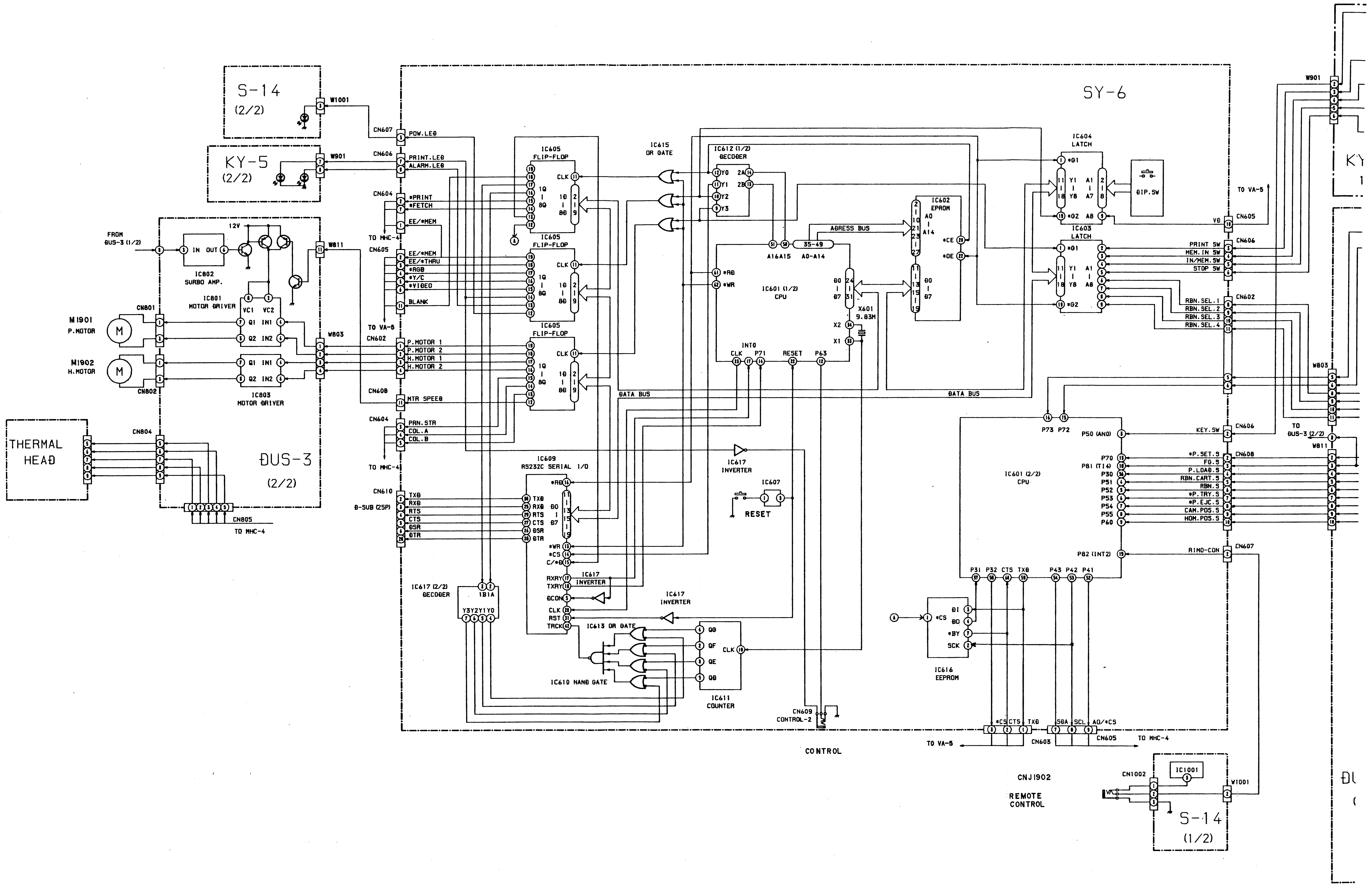

IF-13 BOARD
VA-5 BOARD
IC703
IC701
IC702
IC704
IC705
IC706
IC707
IC708
IC709
IC710
AMP
J702
J704
J706
J708
J710
J712
J701
J703
J705
J707
J709
J711
R
G
B
SYNC
Y/C
VIDEO
OUTPUT
INPUT
RV701 R LEVEL
RV702 G LEVEL
RV703 B LEVEL
RV704 SYNC LEVEL
RV705 C LEVEL
RV706 Y LEVEL
RV707 VIDEO LEVEL
702-8
702-6
702-4
702-2
703-5
703-3
703-1
CTL-1 (RGB)
CTL-2 (YC)
CTL-3 (VIDEO)
706-1
706-2
706-3
704-2
704-8
704-6
704-4
705-1
705-5
705-3
MONITOR
+B
RV710
RV709
RV708
707-2
707-3
707-4
6-8
6-6
6-4
6-2
7-5
7-3
7-1
10-1
10-2
10-3
9-2
9-8
9-6
9-4
8-1
8-5
8-3
3-2
3-3
3-4
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP16
TP17
TP18
TP19
RV1 R-E LEVEL
RV2 B-E LEVEL
Q1,2 R BUFF
Q3,4 G BUFF
Q5,6 B BUFF
Q7,8 SYNC BUFF
Q14,15 C BUFF
Q12,13 Y BUFF
Q949,Q950 V BUFF
FL1 COMB FILTER
Q9 BUFF
Q11
IC5 M.M
IC4
IC2
IC1
IC7
IC6 VIDEO AGC/ SYNC SEP
RV5 P-AGC
RV7 S-AGC
IC10 TV SIGNAL PROCESSOR
RV999 PHASE
RV996 V DLY
X998 500kHz
CV999 FSC 4.43
X999 4.43MHz
PHASE
VFB
VCO
X4
C IN
Y IN
SHR
COL
HD+
VD
BG
R OUT
G OUT
B OUT
RV16 FLATNESS
RV17 SUB COL.
RV20 SUB BRT
RV19 SUB PIX
IC9 M.M
Q20, 84 BUFF
Q26 BUFF
IC11
LIN R
LIN G
LIN B
BRT
EXTPIC
HP
VP
EXT CLAMP
TV R
TV G
TV B
TV/EXT
R IKD
R IKC
R OUT
G IKD
G IKC
G OUT
B IKD
B IKC
SW
B OUT
IC32
IC14 VIDEO SIGNAL DETECTER
RV6 S DET
IC15 SYNC SEP
CSY
HS
VS
VF
X2 4MHz
IC30 M.M
RV4 H.DLY
MEM
RGB
Y/C
BLK
TP57
Q117,118 AMP
RV29 SYNC-MONI LEVEL
TP61
RV33 R-MONI LEVEL
TP62
RV34 G-MONI LEVEL
TP63
RV35 B-MONI LEVEL
TP60
RV30 V-MONI LEVEL
TP58
IC23 AMP
RV32 C-MONI LEVEL
FL6 BPF
TP59
RV31 Y-MONI LEVEL
DL5 DELAY
IC22 ENCODER
SYNC
BF
R PC
G PC
B PC
R TV
G TV
B TV
SC
R OUT
G OUT
B OUT
VIDEO OUT
C OUT
C IN
Y OUT
Y IN
IC399 M.M
Q116 BUFF
Q115 BUFF
Q114 BUFF
IC31
IC21 CHARACTER GENERATOR
V
H
SDA
SCL
AD/CS
TP56
Q113 BUFF
Q998 SUB CARRIER GENERATOR
X997 4.43MHz
CV998 MONI SC
TP48
TP51
TP54
Q104 BUFF
Q108 BUFF
Q112 BUFF
Q102,10 AMP
Q106,10 AMP
Q110,11 AMP
RV26 SUB R-MONI
RV28 SUB B-MONI

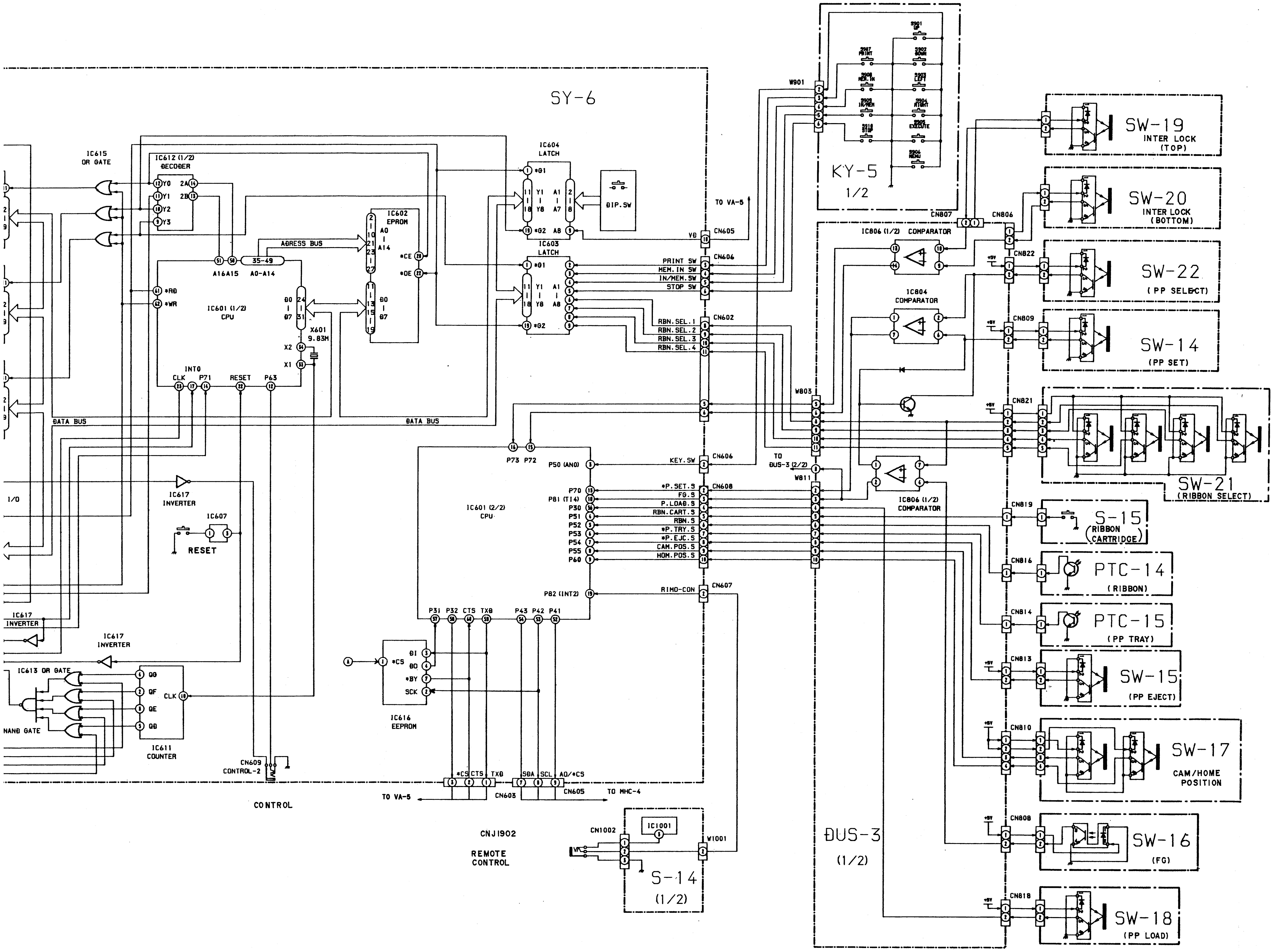


Q1,2 R BUFF
TP2
Q3,4 G BUFF
TP4
Q5,6 B BUFF
TP6
Q7,8 SYNC BUFF
Q14,15 C BUFF
Q12,13 Y BUFF
FL1 COMB FILTER
TP10
TP12
TP16
TP17
Q9 BUFF
Q11
IC4
IC5 M.M
IC2
IC1
IC7
TP8
IC6 VIDEO AGC/ SYNC SEP
RV5 P-AGC
RV7 S-AGC
TP19
TP18
IC10 TV SIGNAL PROCESSOR
RV999 PHASE
RV996 V DLY
X998 500kHz
CV999 FSC 4.43
X999 4.43MHz
PHASE
VFB
VC O
X4
C IN
Y IN
SHR
COL
HD+
VD
BG
R OUT
G OUT
B OUT
H IN
V IN
RV16 FLATNESS
+B
RV17 SUB COL.
RV20 SUB BRT
RV19 SUB PIX
IC9 M.M
Q20, 84 BUFF
Q26
IC11
LIN R
LIN G
LIN B
BRT
EXTPIC
HP
VP
EXT CLAMP
TV R
TV G
TV B
TV/EXT
R IKD
R IKC
R OUT
G IKD
G IKC
G OUT
B IKD
B IKC
SW
B OUT
RV10 R.DRV
RV11 R.CUT
Q25
RV12 G.DRV
RV13 G.CUT
Q24
RV14 B.DRV
RV15 B.CUT
Q23
IC12 AMP
IC13 AMP
TP21
TP26
TP31
IC18 AMP
TP37
Q77 SLICE
TP38
IC19 EDGE ENHANCER
RV25 SUB SHARP
Q80-82 AMP
TP40
Q32 SLICE
TP22
Q33-37 AMP
TP23
DL2 DELAY
RV21 SUB R-GAIN
Q40, Q42-44 AMP
TP24
Q47 SLICE
TP27
Q48-52 AMP
TP28
DL3 DELAY
Q55, Q57-59 AMP
TP29
Q62 SLICE
TP32
Q63-67 AMP
TP33
DL4 DELAY
Q70 Q72-74 AMP
TP34
TP36
RV23 SUB B-GAIN
RV24 SLICE LEVEL
IC17 SLICE LEVEL
5-1
5-3
5-5
12-2~10
TO MHC-4 BOARD CN401
IC32
IC14 VIDEO SIGNAL DETECTER
RV6 S DET
IC30 M.M
RV4 H. DLY
IC15 SYNC SEP
X2 4MHz
IC16 BUFF
TP41 HD 5-7
TP42 VD 5-9
TP43 FLM 5-11
TP44 CLAMP 5-13
TO MHC-4 BOARD CN401
Q117,118 AMP
RV29 SYNC-MONI LEVEL
MEM
RGB
Y/C
BLK
IC26 IC27 IC28 IC29 SYSTEM CONTROL LOGIC
SYS VD 11-10
EE/MEM 11-2
THRU/EE.MEM 11-3
RGB 11-4
S.VIDEO 11-5
SDA 11-7
SCL 11-8
AO/CS 11-9
BLK 11-11
TO SY-6 BOARD CN605
TP55 INT SYNC 4-9
IC22 ENCODER
SYNC
BF
R PC
G PC
B PC
R TV
G TV
B TV
SC
R OUT
G OUT
B OUT
VIDEO OUT
C OUT
C IN
Y OUT
Y IN
M.M
IC399
Q116 BUFF
Q115 BUFF
Q114 BUFF
IC31
IC21 CHARACTER GENERATOR
IC399 M.M
V
H
SDA
SCL
AO/CS
IC23 AMP
RV32 C-MONI LEVEL
FL6 BPF
DL5 DELAY
AMP
RV31 Y-MONI LEVEL
TP56
Q113 BUFF
Q998 SUB CARRIER GENERATOR
X997 4.43MHz
CV998 MONI SC
TP48
Q104 BUFF
Q102,103 AMP
RV26 SUB R-MONI
Q101 BUFF
TP46
D/A R 4-1
TP51
Q108 BUFF
Q106,107 AMP
Q105 BUFF
TP49
D/A G 4-3
TP54
Q112 BUFF
Q110,111 AMP
RV28 SUB B-MONI
Q109 BUFF
TP52
D/A B 4-5
TO MHC-4 BOARD CN402
DSC-4 BOARD
RV1101 R
RV1102 G
RV1103 B
RV1104 SHARP
RV1105 BRIGHT
RV1106 PICTURE
RV1108 COLOR

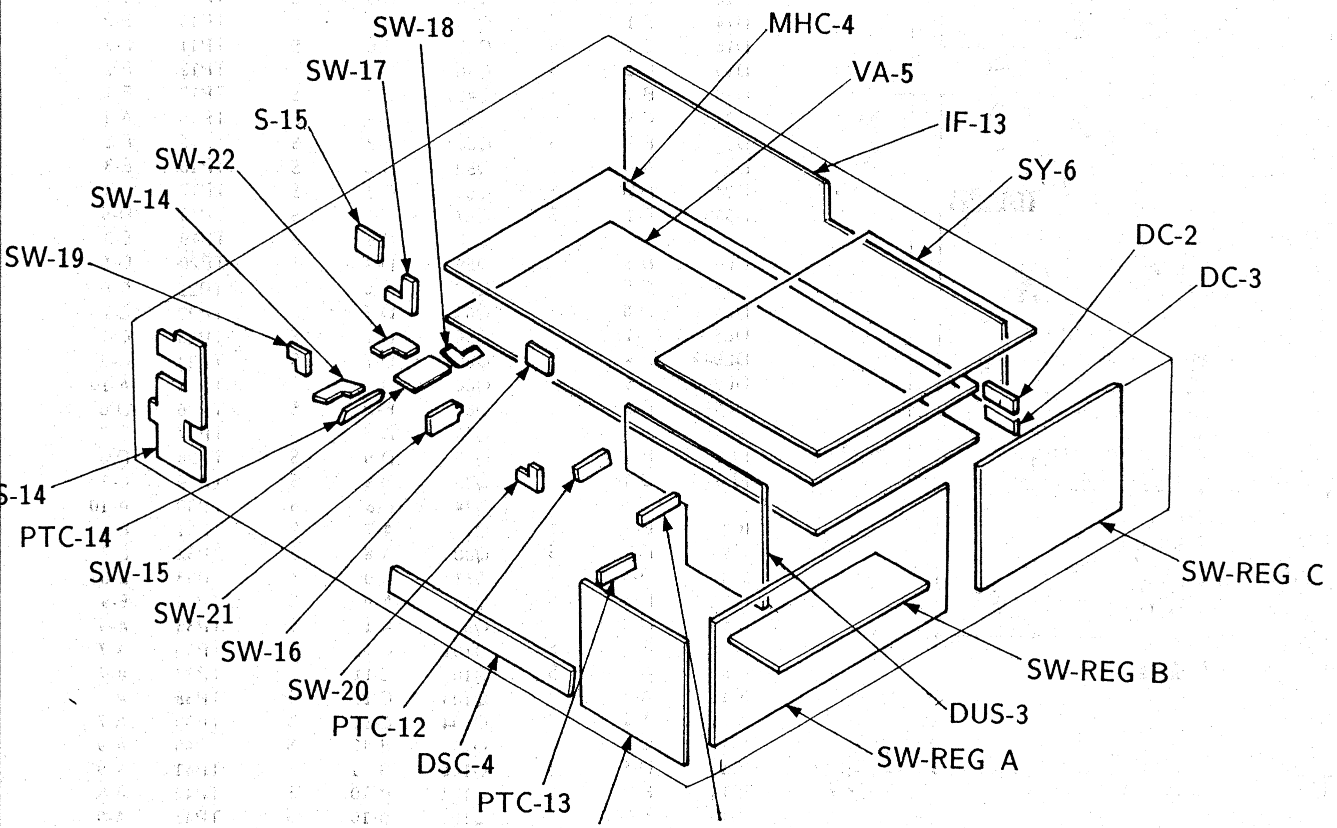
VIDEO(ANALOG) BLOCK DIAGRAM

3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM

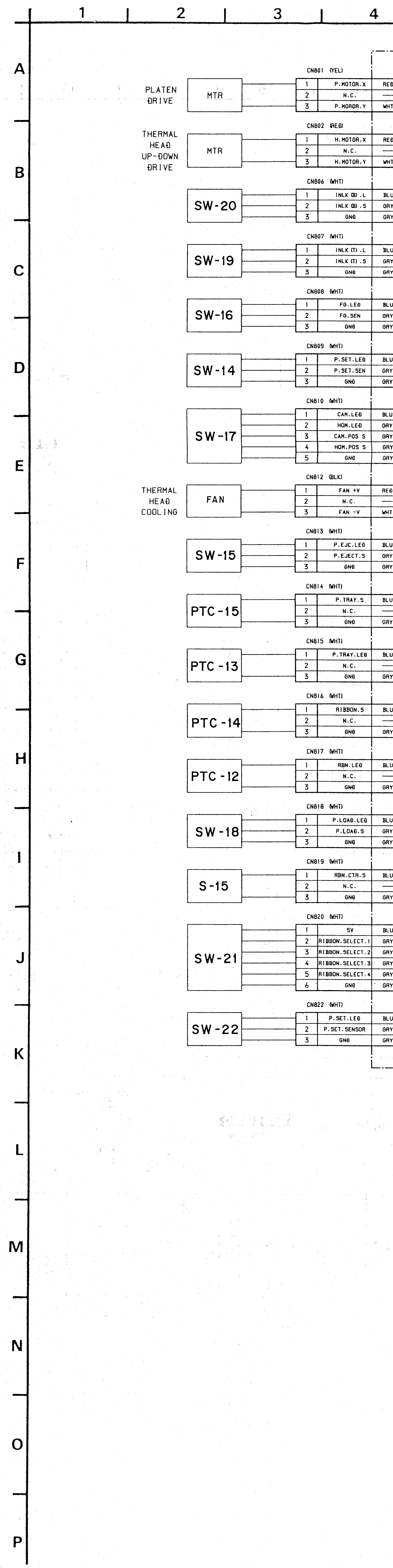

S-14 (2/2)
W1001
KY-5 (2/2)
W901
FROM ĐUS-3 (1/2)
12V
IC802 SURBO AMP.
IN OUT
IC801 MOTOR ĐRIVER
VC1 VC2
Q1 IN1
Q2 IN2
W811
W803
CN801
CN802
M1901 P.MOTOR
M1902 H.MOTOR
IC803 MOTOR ĐRIVER
THERMAL HEAĐ
CN804
ĐUS-3 (2/2)
CN805
TO MHC-4
CN607
POW.LEĐ
CN606
PRINT.LEĐ
ALARM.LEĐ
CN604
*PRINT
*FETCH
EE/*MEM
TO MHC-4
CN605
EE/*MEM
EE/*THRU
*RGB
*Y/C
*VIĐEO
BLANK
TO VA-5
CN602
P.MOTOR 1
P.MOTOR 2
H.MOTOR 1
H.MOTOR 2
CN608
MTR SPEEĐ
CN604
PRN.STR
COL.A
COL.B
TO MHC-4
CN610
Đ-SUB (25P)
TXĐ
RXĐ
RTS
CTS
ĐSR
ĐTR
IC605 FLIP-FLOP
CLK
1Q
8Q
1Đ
8Đ
IC615 OR GATE
IC612 (1/2) ĐECOĐER
Y0 Y1 Y2 Y3
2A 2B
A16A15
A0-A14
35-49
AĐRESS BUS
*RĐ
*WR
IC601 (1/2) CPU
Đ0 Đ7
X601 9.83M
X2 X1
INT0
CLK P71 RESET P63
ĐATA BUS
IC602 EPROM
A0 A14
*CE
*OE
Đ0 Đ7
IC604 LATCH
*G1
Y1 Y8
A1 A8
*G2
IC603 LATCH
ĐIP.SW
SY-6
TO VA-5
CN605
YĐ
CN606
PRINT SW
MEM.IN SW
IN/MEM.SW
STOP SW
CN602
RBN.SEL.1
RBN.SEL.2
RBN.SEL.3
RBN.SEL.4
W803
TO ĐUS-3 (2/2)
W811
P73 P72
P50 (AN0)
KEY.SW
CN606
IC601 (2/2) CPU
P70
P81 (T14)
P30
P51
P52
P53
P54
P55
P60
CN608
*P.SET.S
FG.S
P.LOAĐ.S
RBN.CART.S
RBN.S
*P.TRY.S
*P.EJC.S
CAM.POS.S
HOM.POS.S
P82 (INT2)
RIMO-CON
CN607
P31 P32 CTS TXĐ
P43 P42 P41
IC609 RS232C SERIAL I/O
*RĐ
TXĐ RXĐ RTS CTS ĐSR ĐTR
Đ0 Đ7
*WR *CS C/*Đ
RXRY TXRY
ĐCON
CLK RST TRCK
IC617 INVERTER
IC617 (2/2) ĐECOĐER
1B1A
Y3Y2Y1Y0
IC613 OR GATE
IC610 NANĐ GATE
QĐ QF QE QĐ
IC611 COUNTER
IC607
RESET
CN609 CONTROL-2
CONTROL
ĐI ĐO
*CS
*BY
SCK
IC616 EEPROM
*CS CTS TXĐ
SĐA SCL A0/*CS
CN603
CN605
TO VA-5
TO MHC-4
CNJ1902
REMOTE CONTROL
CN1002
IC1001
W1001
S-14 (1/2)
W901
KY
ĐU

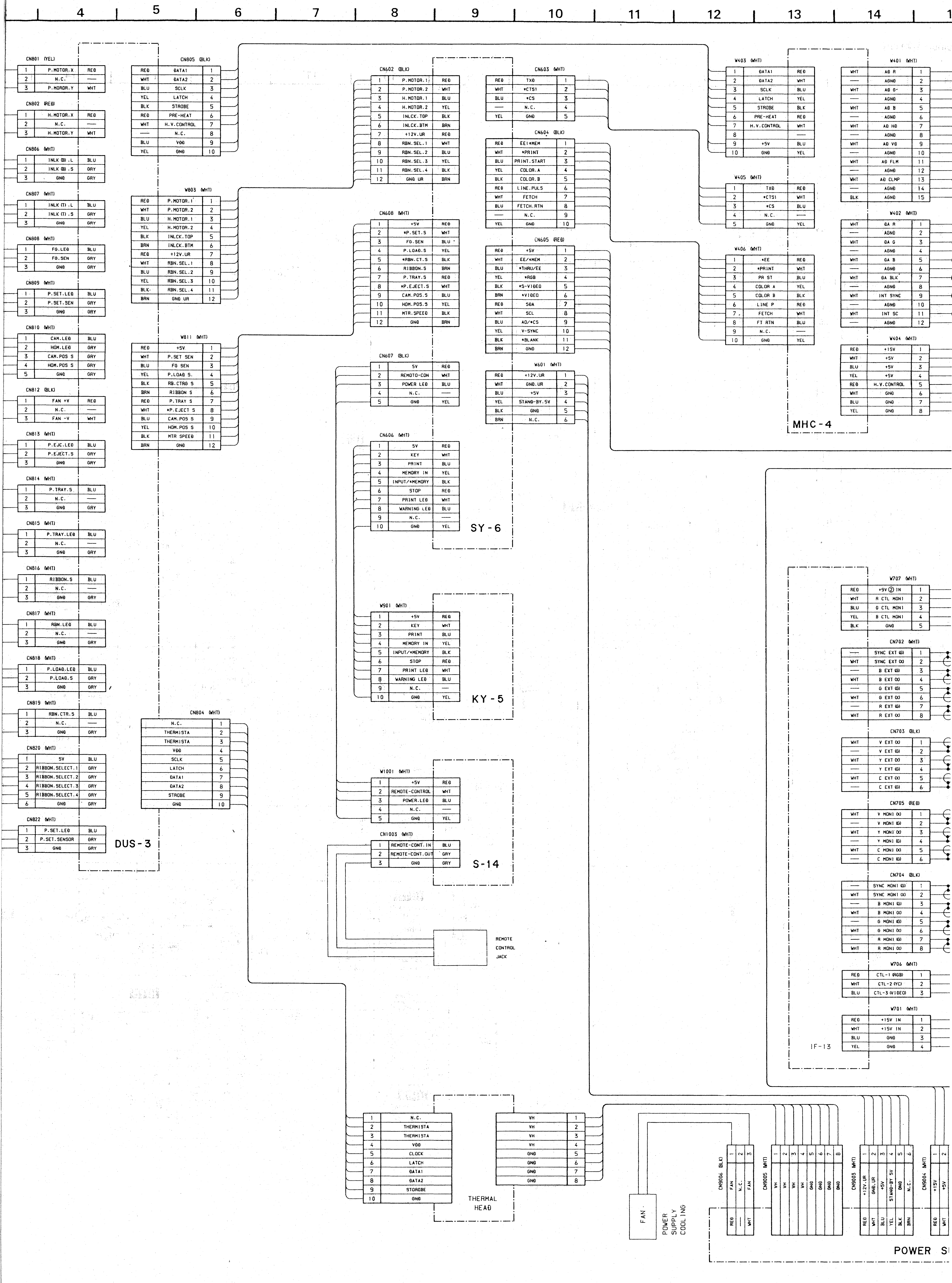

SY-6
IC615
OR GATE
IC612 (1/2)
DECODER
Y0
Y1
Y2
Y3
2A
2B
IC604
LATCH
*G1
*G2
Y1
Y8
A1
A7
A8
DIP.SW
IC602
EPROM
A0
A14
D0
D7
*CE
*OE
ADRESS BUS
35-49
A16A15
A0-A14
*RD
*WR
IC601 (1/2)
CPU
X601
9.83M
X2
X1
INT0
CLK
P71
RESET
P63
DATA BUS
IC603
LATCH
TO VA-5
VD
CN605
CN606
PRINT SW
MEM.IN SW
IN/MEM.SW
STOP SW
CN602
RBN.SEL.1
RBN.SEL.2
RBN.SEL.3
RBN.SEL.4
I/O
IC617
INVERTER
IC607
RESET
P73
P72
P50 (AN0)
KEY.SW
IC601 (2/2)
CPU
P70
P81 (T14)
P30
P51
P52
P53
P54
P55
P60
CN608
*P.SET.S
FG.S
P.LOAD.S
RBN.CART.S
RBN.S
*P.TRY.S
*P.EJC.S
CAM.POS.S
HOM.POS.S
P82 (INT2)
RIMO-CON
CN607
P31
P32
CTS
TXD
P43
P42
P41
IC616
EEPROM
*CS
DI
DO
*BY
SCK
IC613 OR GATE
NAND GATE
QG
QF
QE
QD
CLK
IC611
COUNTER
CN609
CONTROL-2
CONTROL
*CS
CTS
TXD
SDA
SCL
AO/*CS
TO VA-5
CN603
CN605
TO MHC-4
CNJ1902
REMOTE
CONTROL
CN1002
IC1001
W1001
S-14
(1/2)
W901
S901
UP
S902
DOWN
S903
LEFT
S904
RIGHT
S905
EXECUTE
S906
MENU
S907
PRINT
S908
MEM.IN
S909
IN/MEM
S910
STOP
KY-5
1/2
CN807
CN806
IC806 (1/2) COMPARATOR
IC804
COMPARATOR
W803
TO
DUS-3 (2/2)
W811
IC806 (1/2)
COMPARATOR
SW-19
INTER LOCK
(TOP)
SW-20
INTER LOCK
(BOTTOM)
+5V
CN822
SW-22
(PP SELECT)
CN809
SW-14
(PP SET)
CN821
SW-21
(RIBBON SELECT)
CN819
S-15
RIBBON
CARTRIDGE
CN816
PTC-14
(RIBBON)
CN814
PTC-15
(PP TRAY)
CN813
SW-15
(PP EJECT)
CN810
SW-17
CAM/HOME
POSITION
CN808
SW-16
(FG)
CN818
SW-18
(PP LOAD)
DUS-3
(1/2)

. CIRCUIT BOARD LOCATION


SW-18
SW-17
S-15
SW-22
SW-14
SW-19
-14
PTC-14
SW-15
SW-21
SW-16
SW-20
PTC-12
DSC-4
PTC-13
KY-5
PTC-15
MHC-4
VA-5
IF-13
SY-6
DC-2
DC-3
SW-REG C
SW-REG B
DUS-3
SW-REG A

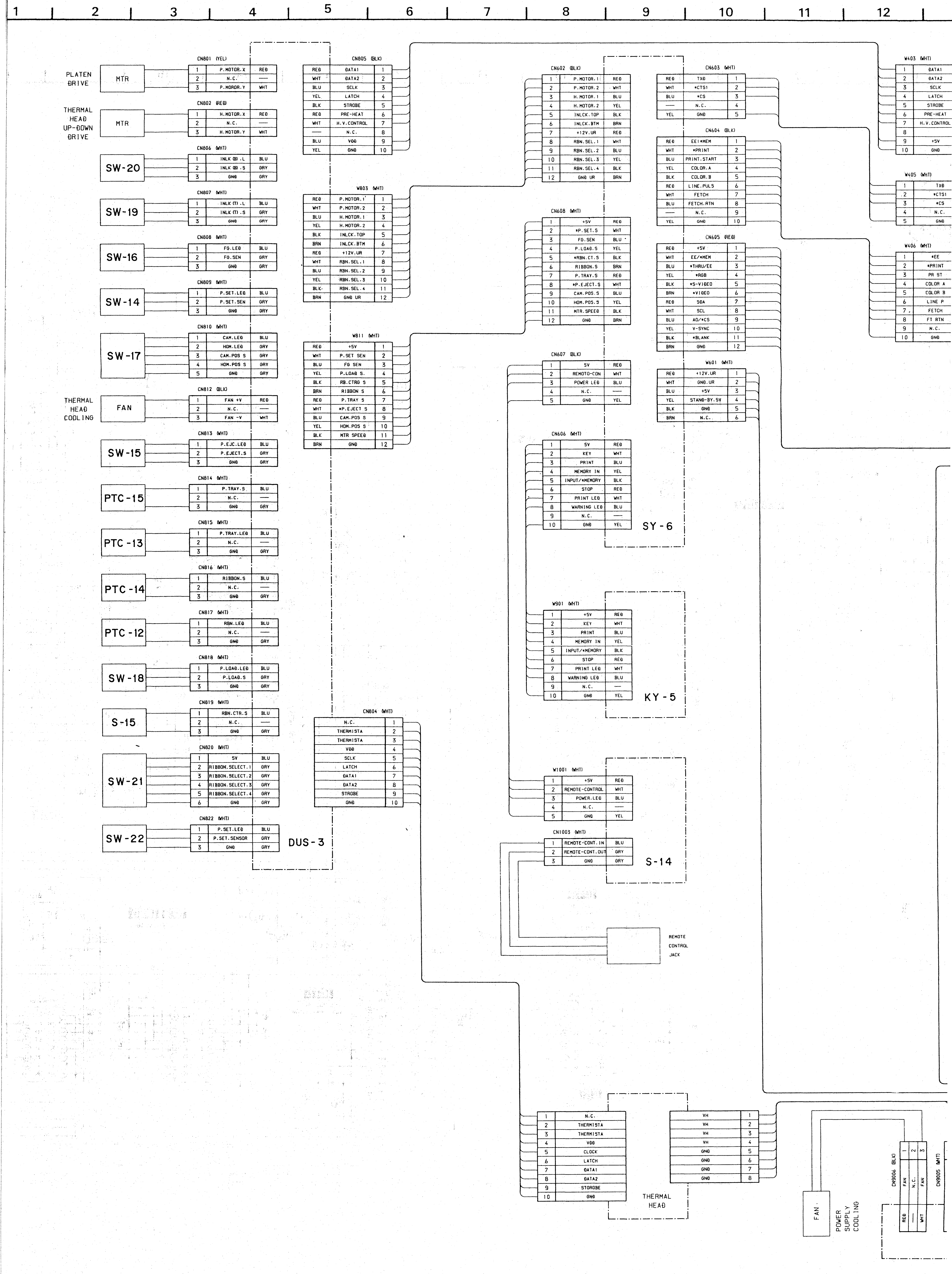
3-6. FRAME SCHEMATIC DIAGRAM

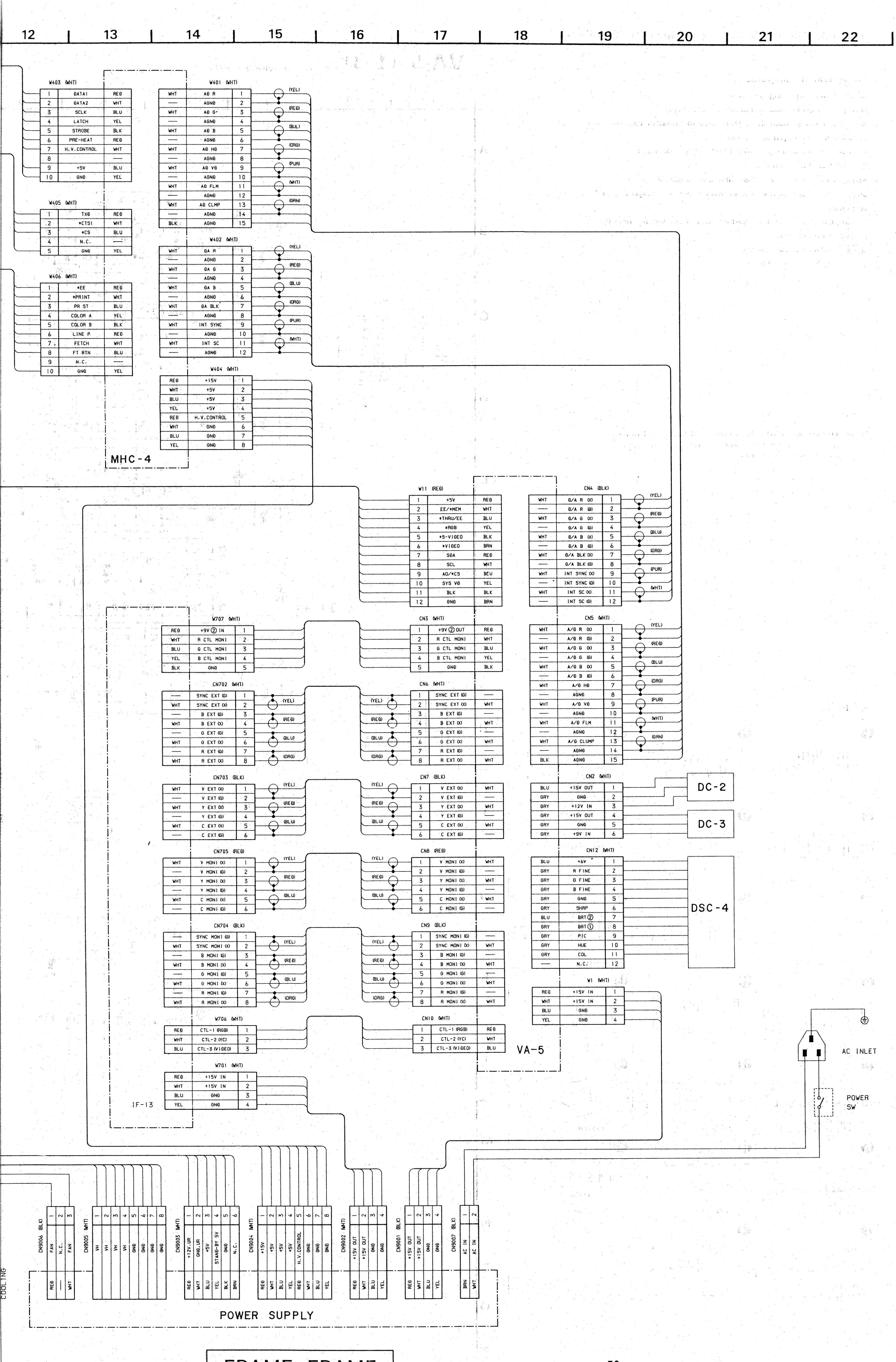

1
2
3
4
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
PLATEN
DRIVE
MTR
CN801 (YEL)
1 P.MOTOR.X RED
2 N.C. —
3 P.MOROR.Y WHT
THERMAL
HEAD
UP-DOWN
DRIVE
MTR
CN802 (RED)
1 H.MOTOR.X RED
2 N.C. —
3 H.MOTOR.Y WHT
SW-20
CN806 (WHT)
1 INLK (B).L BLU
2 INLK (B).S GRY
3 GND GRY
SW-19
CN807 (WHT)
1 INLK (T).L BLU
2 INLK (T).S GRY
3 GND GRY
SW-16
CN808 (WHT)
1 FG.LED BLU
2 FG.SEN GRY
3 GND GRY
SW-14
CN809 (WHT)
1 P.SET.LED BLU
2 P.SET.SEN GRY
3 GND GRY
SW-17
CN810 (WHT)
1 CAM.LED BLU
2 HOM.LED GRY
3 CAM.POS S GRY
4 HOM.POS S GRY
5 GND GRY
THERMAL
HEAD
COOLING
FAN
CN812 (BLK)
1 FAN +V RED
2 N.C. —
3 FAN -V WHT
SW-15
CN813 (WHT)
1 P.EJC.LED BLU
2 P.EJECT.S GRY
3 GND GRY
PTC-15
CN814 (WHT)
1 P.TRAY.S BLU
2 N.C. —
3 GND GRY
PTC-13
CN815 (WHT)
1 P.TRAY.LED BLU
2 N.C. —
3 GND GRY
PTC-14
CN816 (WHT)
1 RIBBON.S BLU
2 N.C. —
3 GND GRY
PTC-12
CN817 (WHT)
1 RBN.LED BLU
2 N.C. —
3 GND GRY
SW-18
CN818 (WHT)
1 P.LOAD.LED BLU
2 P.LOAD.S GRY
3 GND GRY
S-15
CN819 (WHT)
1 RBN.CTR.S BLU
2 N.C. —
3 GND GRY
SW-21
CN820 (WHT)
1 5V BLU
2 RIBBON.SELECT.1 GRY
3 RIBBON.SELECT.2 GRY
4 RIBBON.SELECT.3 GRY
5 RIBBON.SELECT.4 GRY
6 GND GRY
SW-22
CN822 (WHT)
1 P.SET.LED BLU
2 P.SET.SENSOR GRY
3 GND GRY


4
5
6
7
8
9
10
11
12
13
14
CN801 (YEL)
CN802 (RED)
CN806 (WHT)
CN807 (WHT)
CN808 (WHT)
CN809 (WHT)
CN810 (WHT)
CN812 (BLK)
CN813 (WHT)
CN814 (WHT)
CN815 (WHT)
CN816 (WHT)
CN817 (WHT)
CN818 (WHT)
CN819 (WHT)
CN820 (WHT)
CN822 (WHT)
DUS-3
CN805 (BLK)
W803 (WHT)
W811 (WHT)
CN804 (WHT)
CN602 (BLK)
CN608 (WHT)
CN607 (BLK)
CN606 (WHT)
SY-6
W901 (WHT)
KY-5
W1001 (WHT)
CN1003 (WHT)
S-14
REMOTE CONTROL JACK
THERMAL HEAD
CN603 (WHT)
CN604 (BLK)
CN605 (RED)
W601 (WHT)
W403 (WHT)
W405 (WHT)
W406 (WHT)
MHC-4
W401 (WHT)
W402 (WHT)
W404 (WHT)
W707 (WHT)
CN702 (WHT)
CN703 (BLK)
CN705 (RED)
CN704 (BLK)
W706 (WHT)
W701 (WHT)
IF-13
FAN
POWER SUPPLY COOLING
CN9006 (BLK)
CN9005 (WHT)
CN9003 (WHT)
CN9004 (WHT)
POWER S

FRAM

ME SCHEMATIC DIAGRAM


1 2 3 4 5 6 7 8 9 10 11 12
PLATEN DRIVE
MTR
THERMAL HEAD UP-DOWN DRIVE
MTR
SW-20
SW-19
SW-16
SW-14
SW-17
THERMAL HEAD COOLING
FAN
SW-15
PTC-15
PTC-13
PTC-14
PTC-12
SW-18
S-15
SW-21
SW-22
CN801 (YEL)
1 P.MOTOR.X RED
2 N.C. —
3 P.MOROR.Y WHT
CN802 (RED)
1 H.MOTOR.X RED
2 N.C. —
3 H.MOTOR.Y WHT
CN806 (WHT)
1 INLK (B).L BLU
2 INLK (B).S GRY
3 GND GRY
CN807 (WHT)
1 INLK (T).L BLU
2 INLK (T).S GRY
3 GND GRY
CN808 (WHT)
1 FG.LED BLU
2 FG.SEN GRY
3 GND GRY
CN809 (WHT)
1 P.SET.LED BLU
2 P.SET.SEN GRY
3 GND GRY
CN810 (WHT)
1 CAM.LED BLU
2 HOM.LED GRY
3 CAM.POS S GRY
4 HOM.POS S GRY
5 GND GRY
CN812 (BLK)
1 FAN +V RED
2 N.C. —
3 FAN -V WHT
CN813 (WHT)
1 P.EJC.LED BLU
2 P.EJECT.S GRY
3 GND GRY
CN814 (WHT)
1 P.TRAY.S BLU
2 N.C. —
3 GND GRY
CN815 (WHT)
1 P.TRAY.LED BLU
2 N.C. —
3 GND GRY
CN816 (WHT)
1 RIBBON.S BLU
2 N.C. —
3 GND GRY
CN817 (WHT)
1 RBN.LED BLU
2 N.C. —
3 GND GRY
CN818 (WHT)
1 P.LOAD.LED BLU
2 P.LOAD.S GRY
3 GND GRY
CN819 (WHT)
1 RBN.CTR.S BLU
2 N.C. —
3 GND GRY
CN820 (WHT)
1 5V BLU
2 RIBBON.SELECT.1 GRY
3 RIBBON.SELECT.2 GRY
4 RIBBON.SELECT.3 GRY
5 RIBBON.SELECT.4 GRY
6 GND GRY
CN822 (WHT)
1 P.SET.LED BLU
2 P.SET.SENSOR GRY
3 GND GRY
DUS-3
CN805 (BLK)
RED DATA1 1
WHT DATA2 2
BLU SCLK 3
YEL LATCH 4
BLK STROBE 5
RED PRE-HEAT 6
WHT H.V.CONTROL 7
— N.C. 8
BLU VDD 9
YEL GND 10
W803 (WHT)
RED P.MOTOR.1 1
WHT P.MOTOR.2 2
BLU H.MOTOR.1 3
YEL H.MOTOR.2 4
BLK INLCK.TOP 5
BRN INLCK.BTM 6
RED +12V.UR 7
WHT RBN.SEL.1 8
BLU RBN.SEL.2 9
YEL RBN.SEL.3 10
BLK RBN.SEL.4 11
BRN GND UR 12
W811 (WHT)
RED +5V 1
WHT P.SET SEN 2
BLU FG SEN 3
YEL P.LOAD S. 4
BLK RB.CTRG S 5
BRN RIBBON S 6
RED P.TRAY S 7
WHT *P.EJECT S 8
BLU CAM.POS S 9
YEL HOM.POS S 10
BLK MTR SPEED 11
BRN GND 12
CN804 (WHT)
N.C. 1
THERMISTA 2
THERMISTA 3
VDD 4
SCLK 5
LATCH 6
DATA1 7
DATA2 8
STROBE 9
GND 10
CN602 (BLK)
1 P.MOTOR.1 RED
2 P.MOTOR.2 WHT
3 H.MOTOR.1 BLU
4 H.MOTOR.2 YEL
5 INLCK.TOP BLK
6 INLCK.BTM BRN
7 +12V.UR RED
8 RBN.SEL.1 WHT
9 RBN.SEL.2 BLU
10 RBN.SEL.3 YEL
11 RBN.SEL.4 BLK
12 GND UR BRN
CN608 (WHT)
1 +5V RED
2 *P.SET.S WHT
3 FG.SEN BLU
4 P.LOAD.S YEL
5 *RBN.CT.S BLK
6 RIBBON.S BRN
7 P.TRAY.S RED
8 *P.EJECT.S WHT
9 CAM.POS.S BLU
10 HOM.POS.S YEL
11 MTR.SPEED BLK
12 GND BRN
CN607 (BLK)
1 5V RED
2 REMOTO-CON WHT
3 POWER LED BLU
4 N.C. —
5 GND YEL
CN606 (WHT)
1 5V RED
2 KEY WHT
3 PRINT BLU
4 MEMORY IN YEL
5 INPUT/*MEMORY BLK
6 STOP RED
7 PRINT LED WHT
8 WARNING LED BLU
9 N.C. —
10 GND YEL
SY-6
W901 (WHT)
1 +5V RED
2 KEY WHT
3 PRINT BLU
4 MEMORY IN YEL
5 INPUT/*MEMORY BLK
6 STOP RED
7 PRINT LED WHT
8 WARNING LED BLU
9 N.C. —
10 GND YEL
KY-5
W1001 (WHT)
1 +5V RED
2 REMOTE-CONTROL WHT
3 POWER.LED BLU
4 N.C. —
5 GND YEL
CN1003 (WHT)
1 REMOTE-CONT.IN BLU
2 REMOTE-CONT.OUT GRY
3 GND GRY
S-14
REMOTE CONTROL JACK
CN603 (WHT)
RED TXD 1
WHT *CTS1 2
BLU *CS 3
— N.C. 4
YEL GND 5
CN604 (BLK)
RED EE1*MEM 1
WHT *PRINT 2
BLU PRINT.START 3
YEL COLOR.A 4
BLK COLOR.B 5
RED LINE.PULS 6
WHT FETCH 7
BLU FETCH.RTN 8
— N.C. 9
YEL GND 10
CN605 (RED)
RED +5V 1
WHT EE/*MEM 2
BLU *THRU/EE 3
YEL *RGB 4
BLK *S-VIDEO 5
BRN *VIDEO 6
RED SDA 7
WHT SCL 8
BLU AD/*CS 9
YEL V-SYNC 10
BLK *BLANK 11
BRN GND 12
W601 (WHT)
RED +12V.UR 1
WHT GND.UR 2
BLU +5V 3
YEL STAND-BY.5V 4
BLK GND 5
BRN N.C. 6
W403 (WHT)
1 DATA1
2 DATA2
3 SCLK
4 LATCH
5 STROBE
6 PRE-HEAT
7 H.V.CONTROL
8
9 +5V
10 GND
W405 (WHT)
1 TXD
2 *CTS1
3 *CS
4 N.C.
5 GND
W406 (WHT)
1 *EE
2 *PRINT
3 PR ST
4 COLOR A
5 COLOR B
6 LINE P
7 FETCH
8 FT RTN
9 N.C.
10 GND
1 N.C.
2 THERMISTA
3 THERMISTA
4 VDD
5 CLOCK
6 LATCH
7 DATA1
8 DATA2
9 STOROBE
10 GND
VH 1
VH 2
VH 3
VH 4
GND 5
GND 6
GND 7
GND 8
THERMAL HEAD
FAN
POWER SUPPLY COOLING
CN9006 (BLK)
1 FAN RED
2 N.C. —
3 FAN WHT
CN9005 (WHT)



W403 (WHT)

1	DATA1	RED
2	DATA2	WHT
3	SCLK	BLU
4	LATCH	YEL
5	STROBE	BLK
6	PRE-HEAT	RED
7	H.V.CONTROL	WHT
8		—
9	+5V	BLU
10	GND	YEL

W405 (WHT)

1	TXD	RED
2	*CTS1	WHT
3	*CS	BLU
4	N.C.	—
5	GND	YEL

W406 (WHT)

1	*EE	RED
2	*PRINT	WHT
3	PR ST	BLU
4	COLOR A	YEL
5	COLOR B	BLK
6	LINE P	RED
7	FETCH	WHT
8	FT RTN	BLU
9	N.C.	—
10	GND	YEL

W401 (WHT)

WHT	AD R	1
—	AGND	2
WHT	AD G	3
—	AGND	4
WHT	AD B	5
—	AGND	6
WHT	AD HD	7
—	AGND	8
WHT	AD VD	9
—	AGND	10
WHT	AD FLM	11
—	AGND	12
WHT	AD CLMP	13
—	AGND	14
BLK	AGND	15

W402 (WHT)

WHT	DA R	1
—	AGND	2
WHT	DA G	3
—	AGND	4
WHT	DA B	5
—	AGND	6
WHT	DA BLK	7
—	AGND	8
WHT	INT SYNC	9
—	AGND	10
WHT	INT SC	11
—	AGND	12

W404 (WHT)

RED	+15V	1
WHT	+5V	2
BLU	+5V	3
YEL	+5V	4
RED	H.V.CONTROL	5
WHT	GND	6
BLU	GND	7
YEL	GND	8

W11 (RED)

1	+5V	RED
2	EE/*MEM	WHT
3	*THRU/EE	BLU
4	*RGB	YEL
5	*S-VIDEO	BLK
6	*VIDEO	BRN
7	SDA	RED
8	SCL	WHT
9	AO/*CS	BLU
10	SYS VD	YEL
11	BLK	BLK
12	GND	BRN

CN4 (BLK)

WHT	D/A R (X)	1
—	D/A R (G)	2
WHT	D/A G (X)	3
—	D/A G (G)	4
WHT	D/A B (X)	5
—	D/A B (G)	6
WHT	D/A BLK (X)	7
—	D/A BLK (G)	8
WHT	INT SYNC (X)	9
—	INT SYNC (G)	10
WHT	INT SC (X)	11
—	INT SC (G)	12

W707 (WHT)

RED	+9V ② IN	1
WHT	R CTL MONI	2
BLU	G CTL MONI	3
YEL	B CTL MONI	4
BLK	GND	5

CN3 (WHT)

1	+9V ② OUT	RED
2	R CTL MONI	WHT
3	G CTL MONI	BLU
4	B CTL MONI	YEL
5	GND	BLK

CN5 (WHT)

WHT	A/D R (X)	1
—	A/D R (G)	2
WHT	A/D G (X)	3
—	A/D G (G)	4
WHT	A/D B (X)	5
—	A/D B (G)	6
WHT	A/D HD	7
—	AGND	8
WHT	A/D VD	9
—	AGND	10
WHT	A/D FLM	11
—	AGND	12
WHT	A/D CLUMP	13
—	AGND	14
BLK	AGND	15

CN702 (WHT)

—	SYNC EXT (G)	1
WHT	SYNC EXT (X)	2
—	B EXT (G)	3
WHT	B EXT (X)	4
—	G EXT (G)	5
WHT	G EXT (X)	6
—	R EXT (G)	7
WHT	R EXT (X)	8

CN6 (WHT)

1	SYNC EXT (G)	—
2	SYNC EXT (X)	WHT
3	B EXT (G)	—
4	B EXT (X)	WHT
5	G EXT (G)	—
6	G EXT (X)	WHT
7	R EXT (G)	—
8	R EXT (X)	WHT

CN703 (BLK)

WHT	V EXT (X)	1
—	V EXT (G)	2
WHT	Y EXT (X)	3
—	Y EXT (G)	4
WHT	C EXT (X)	5
—	C EXT (G)	6

CN7 (BLK)

1	V EXT (X)	WHT
2	V EXT (G)	—
3	Y EXT (X)	WHT
4	Y EXT (G)	—
5	C EXT (X)	WHT
6	C EXT (G)	—

CN2 (WHT)

BLU	+15V OUT	1
GRY	GND	2
GRY	+12V IN	3
GRY	+15V OUT	4
GRY	GND	5
GRY	+9V IN	6

CN705 (RED)

WHT	V MONI (X)	1
—	V MONI (G)	2
WHT	Y MONI (X)	3
—	Y MONI (G)	4
WHT	C MONI (X)	5
—	C MONI (G)	6

CN8 (RED)

1	V MONI (X)	WHT
2	V MONI (G)	—
3	Y MONI (X)	WHT
4	Y MONI (G)	—
5	C MONI (X)	WHT
6	C MONI (G)	—

CN12 (WHT)

BLU	+6V	1
GRY	R FINE	2
GRY	G FINE	3
GRY	B FINE	4
GRY	GND	5
GRY	SHRP	6
BLU	BRT ②	7
GRY	BRT ①	8
GRY	PIC	9
GRY	HUE	10
GRY	COL	11
—	N.C.	12

CN704 (BLK)

—	SYNC MONI (G)	1
WHT	SYNC MONI (X)	2
—	B MONI (G)	3
WHT	B MONI (X)	4
—	G MONI (G)	5
WHT	G MONI (X)	6
—	R MONI (G)	7
WHT	R MONI (X)	8

CN9 (BLK)

1	SYNC MONI (G)	—
2	SYNC MONI (X)	WHT
3	B MONI (G)	—
4	B MONI (X)	WHT
5	G MONI (G)	—
6	G MONI (X)	WHT
7	R MONI (G)	—
8	R MONI (X)	WHT

W1 (WHT)

RED	+15V IN	1
WHT	+15V IN	2
BLU	GND	3
YEL	GND	4

W706 (WHT)

RED	CTL-1 (RGB)	1
WHT	CTL-2 (YC)	2
BLU	CTL-3 (VIDEO)	3

CN10 (WHT)

1	CTL-1 (RGB)	RED
2	CTL-2 (YC)	WHT
3	CTL-3 (VIDEO)	BLU

W701 (WHT)

RED	+15V IN	1
WHT	+15V IN	2
BLU	GND	3
YEL	GND	4

CN9006 (BLK)

1	FAN	RED
2	N.C.	—
3	FAN	WHT

CN9005 (WHT)

1	VH
2	VH
3	VH
4	VH
5	GND
6	GND
7	GND
8	GND

CN9003 (WHT)

1	+12V.UR	RED
2	GND.UR	WHT
3	+5V	BLU
4	STAND-BY 5V	YEL
5	GND	BLK
6	N.C.	BRN

CN9004 (WHT)

1	+15V	RED
2	+5V	WHT
3	+5V	BLU
4	+5V	YEL
5	H.V.CONTROL	RED
6	GND	WHT
7	GND	BLU
8	GND	YEL

CN9002 (WHT)

1	+15V OUT	RED
2	+15V OUT	WHT
3	GND	BLU
4	GND	YEL

CN9001 (BLK)

1	+15V OUT	RED
2	+15V OUT	WHT
3	GND	BLU
4	GND	YEL

CN9007 (BLK)

1	AC IN	BRN
2	AC IN	WHT

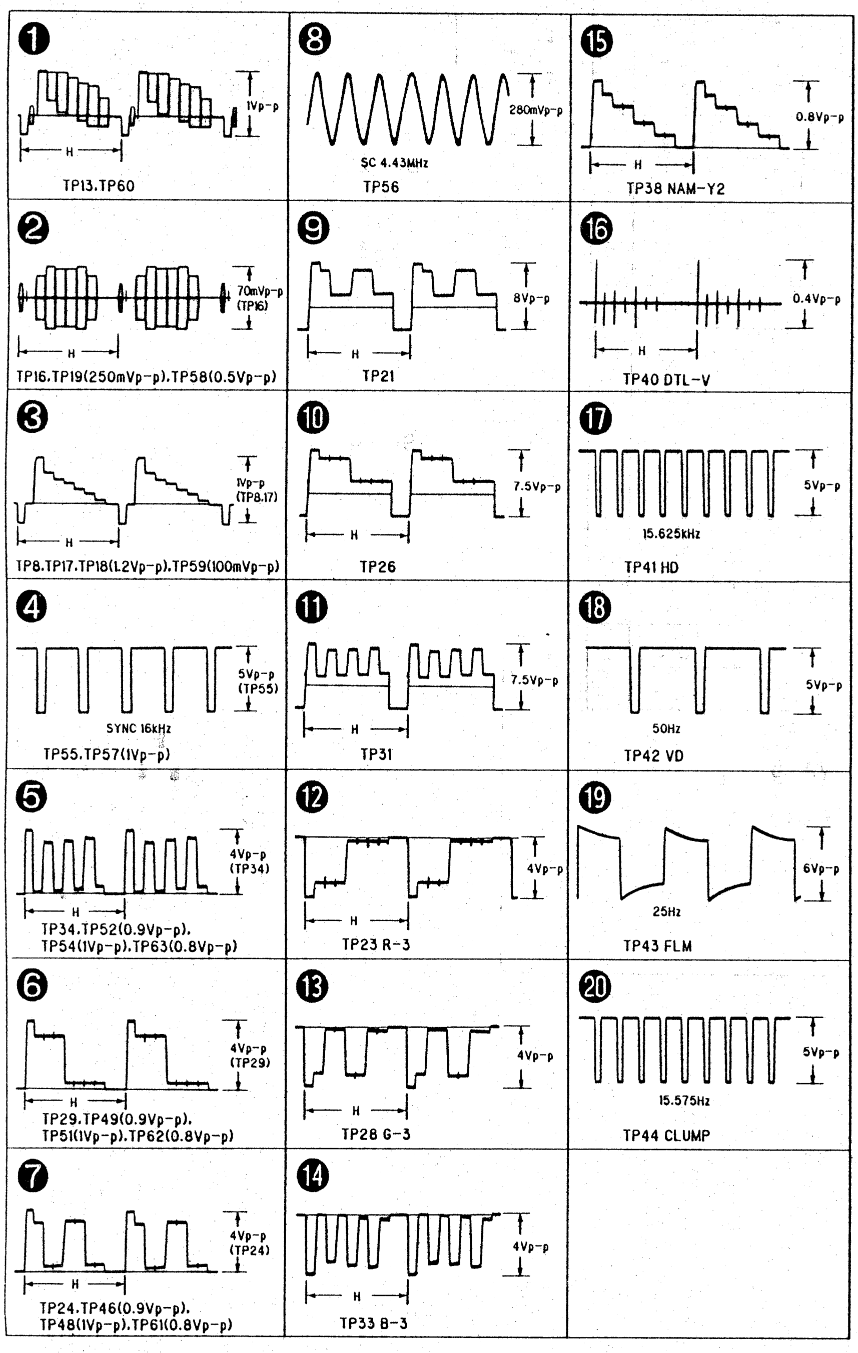
FRAME FRAME

3-7. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

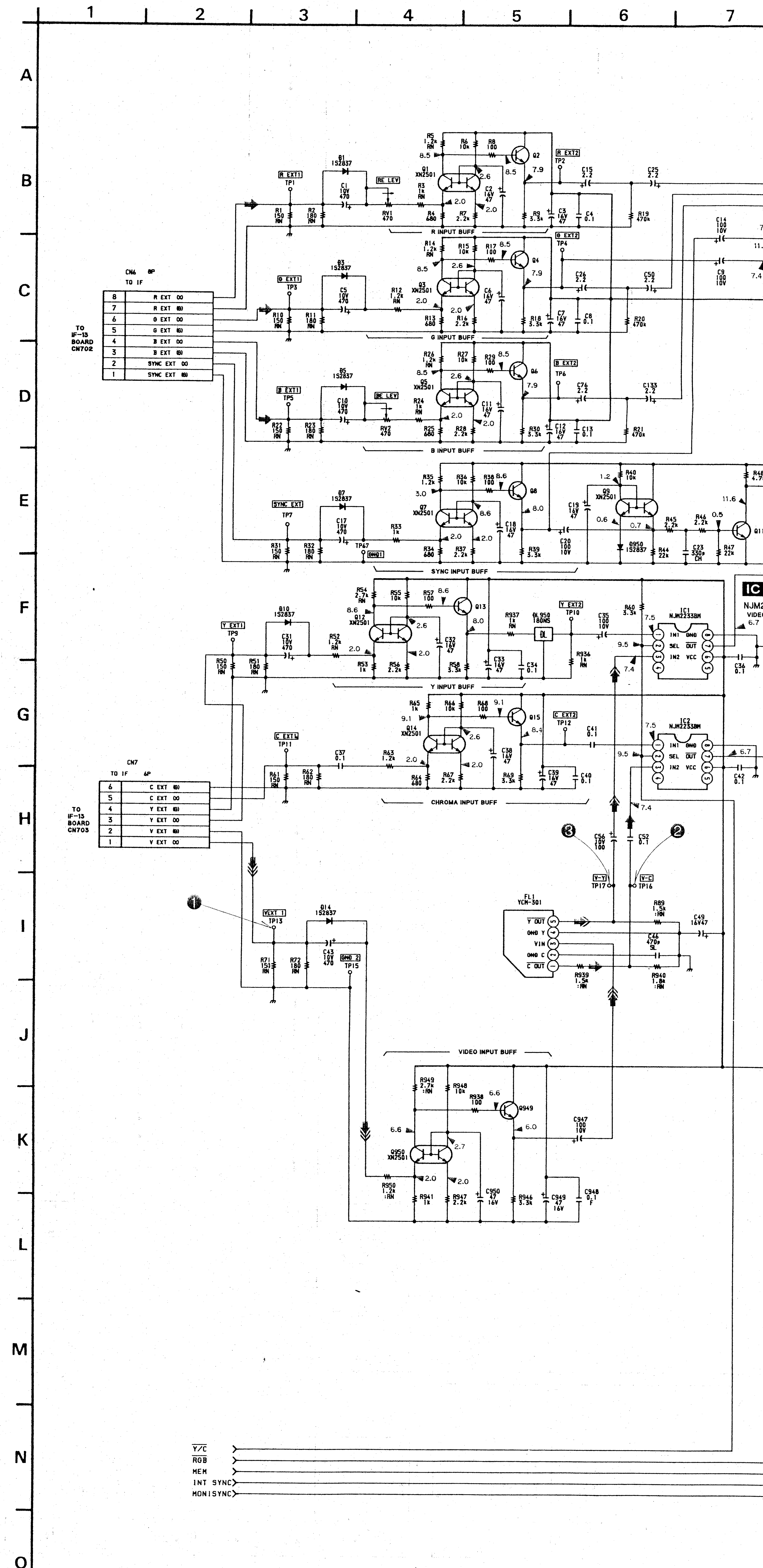
- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▨ : nonflammable resistor.
- ⏛ : fusible resistor.
- ━ : B+ Line.
- Voltages are dc between ground and measurement points.
- Readings are taken with a color-bar signal playback.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltage variations may be noted due to normal production tolerances.
- Circled numbers are waveform references

Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

VA-5 Board



VA-5 (1/3) (VIDEO AMP, VIDEO SWITCH)



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A
B
C
D
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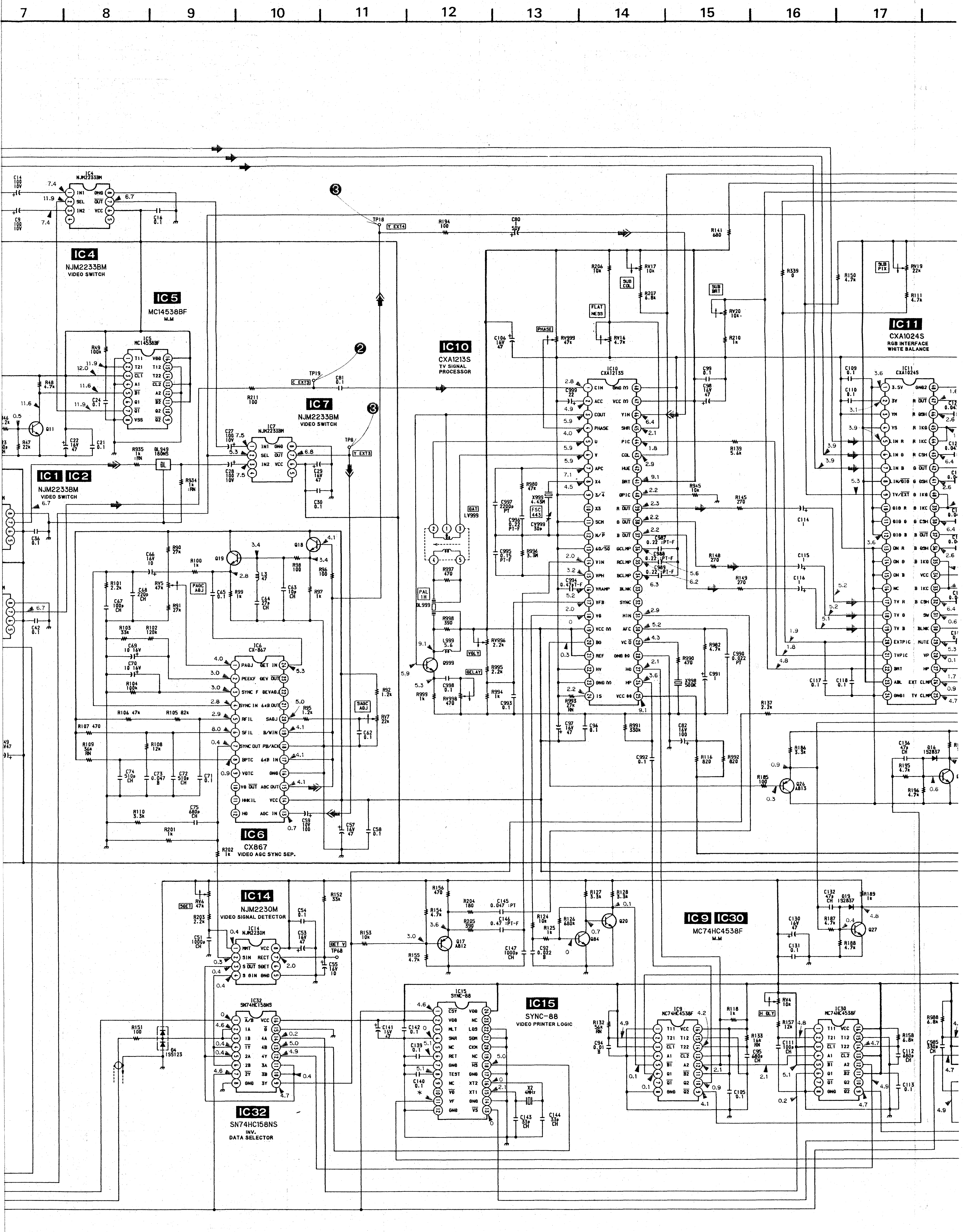
F
G
H
I
J
K
L
M
N
O
R EXT1
TP1
R EXT2
TP2
RE LEV
R INPUT BUFF
G EXT1
TP3
G EXT2
TP4
G INPUT BUFF
B EXT1
TP5
B EXT2
TP6
BE LEV
B INPUT BUFF
SYNC EXT
TP7
TP67
SYNC INPUT BUFF
Y EXT1
TP9
Y EXT2
TP10
Y INPUT BUFF
C EXT1
TP11
C EXT2
TP12
CHROMA INPUT BUFF
CN6 8P
TO IF
TO IF-13 BOARD CN702
8 R EXT (X)
7 R EXT (B)
6 G EXT (X)
5 G EXT (B)
4 B EXT (X)
3 B EXT (B)
2 SYNC EXT (X)
1 SYNC EXT (B)
CN7 6P
TO IF
TO IF-13 BOARD CN703
6 C EXT (B)
5 C EXT (X)
4 Y EXT (B)
3 Y EXT (X)
2 V EXT (B)
1 V EXT (X)
IC1 NJM2233BM
IC2 NJM2233BM
IN1 GND
SEL OUT
IN2 VCC
DL950 180NS
FL1 YCH-301
Y OUT
GND Y
VIN
GND C
C OUT
V-Y TP17
Y-C TP16
V EXT 1 TP13
GND 2 TP15
VIDEO INPUT BUFF
Y/C
RGB
MEM
INT SYNC
MONISYNC


7
8
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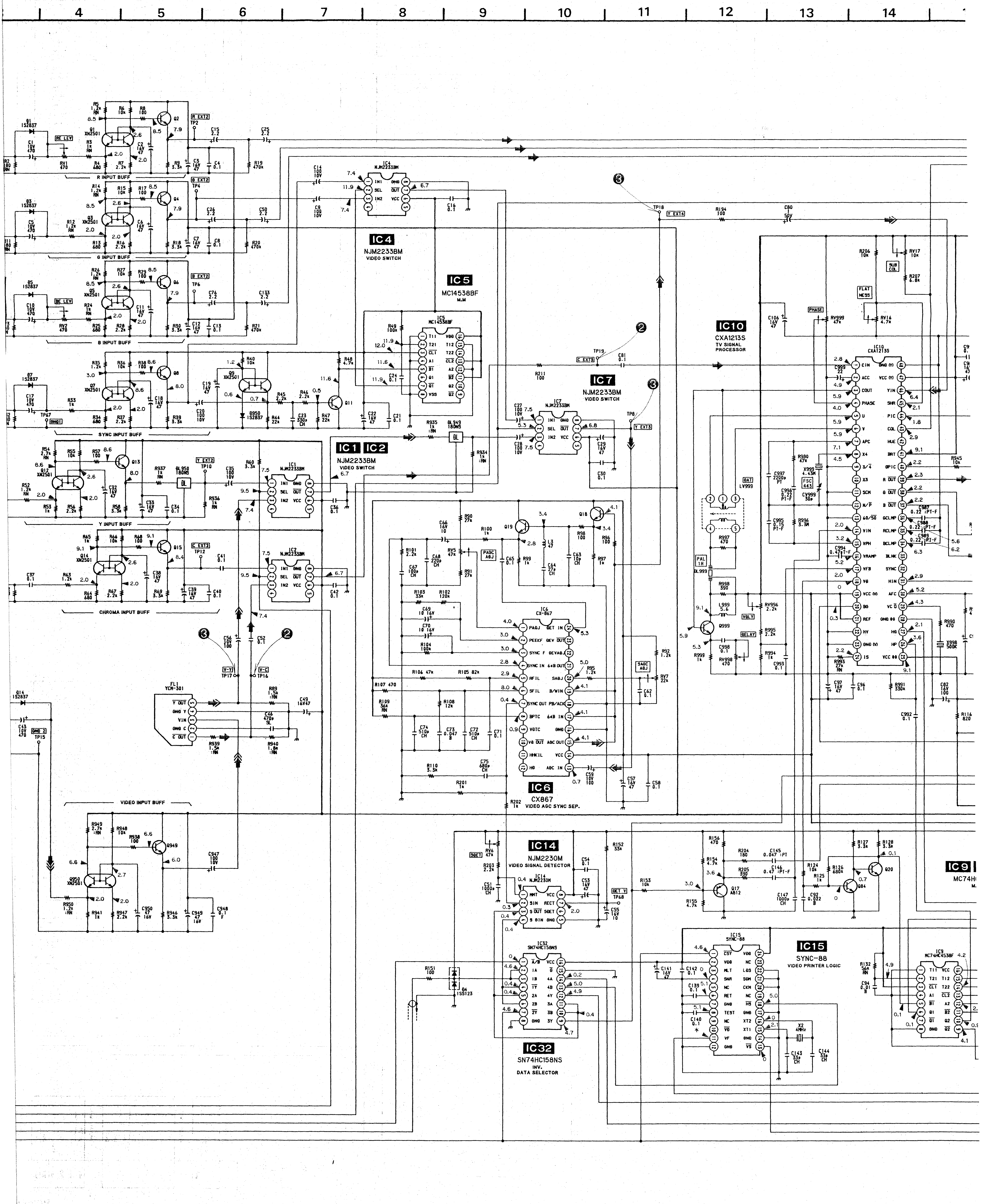
10
11
12
13
14
15
16
17
IC4
NJM2233BM
VIDEO SWITCH
IC5
MC14538BF
M.M
IC1 IC2
NJM2233BM
VIDEO SWITCH
IC7
NJM2233BM
VIDEO SWITCH
IC10
CXA1213S
TV SIGNAL PROCESSOR
IC11
CXA1024S
RGB INTERFACE WHITE BALANCE
IC6
CX867
VIDEO AGC SYNC SEP.
IC14
NJM2230M
VIDEO SIGNAL DETECTOR
IC15
SYNC-88
VIDEO PRINTER LOGIC
IC9 IC30
MC74HC4538F
M.M
IC32
SN74HC158NS
INV. DATA SELECTOR

VIDEO

IDEO SWITCH)



4
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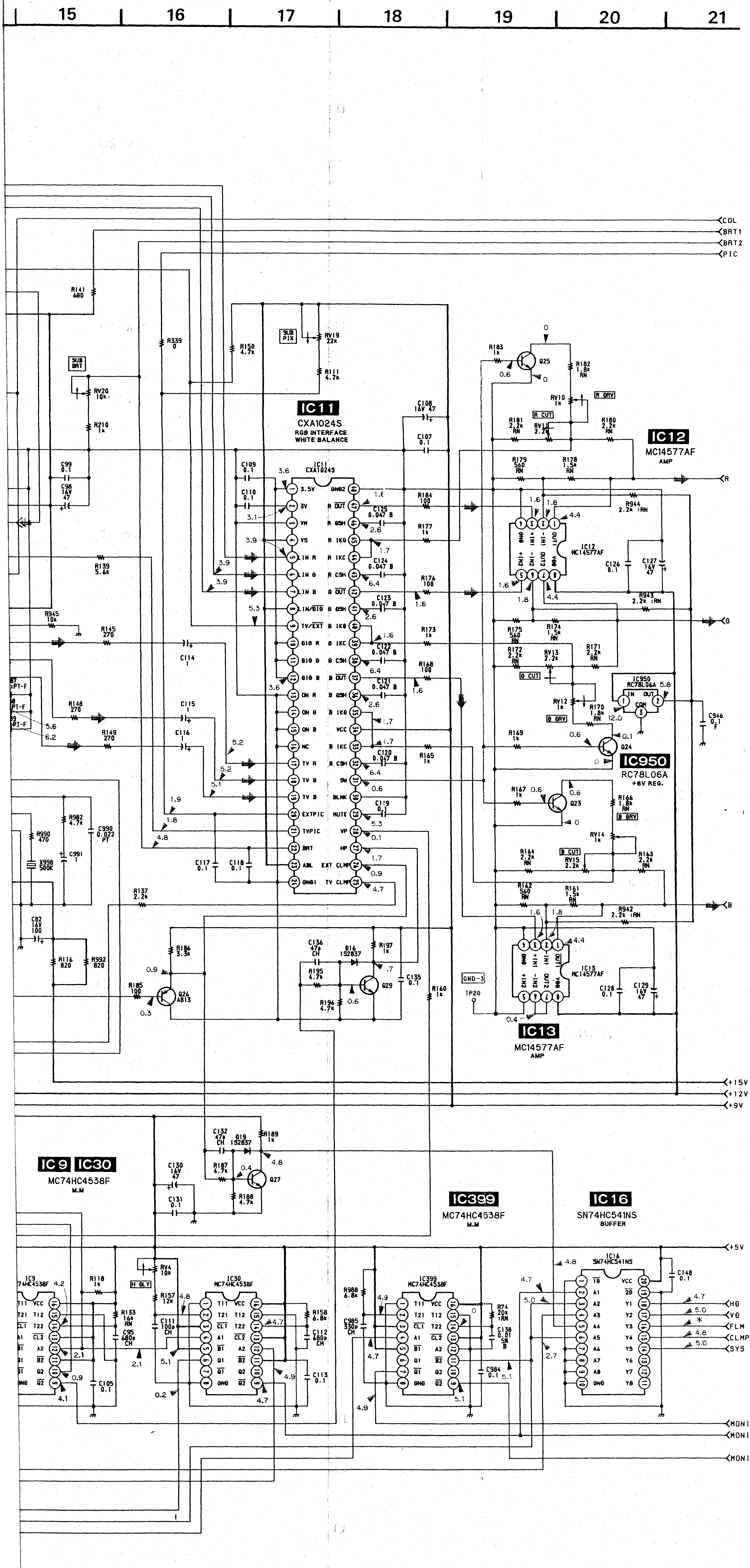
6
7
8
9
10
11
12
13
14
R INPUT BUFF
G INPUT BUFF
B INPUT BUFF
SYNC INPUT BUFF
Y INPUT BUFF
CHROMA INPUT BUFF
VIDEO INPUT BUFF
IC4
NJM2233BM
VIDEO SWITCH
IC5
MC14538BF
IC1 IC2
NJM2233BM
VIDEO SWITCH
IC7
NJM2233BM
VIDEO SWITCH
IC10
CXA1213S
TV SIGNAL PROCESSOR
IC6
CX867
VIDEO AGC SYNC SEP.
IC14
NJM2230M
VIDEO SIGNAL DETECTOR
IC32
SN74HC158NS
INV. DATA SELECTOR
IC15
SYNC-88
VIDEO PRINTER LOGIC
IC9
MC74H
FL1
YCM-301
R EXT2
G EXT2
B EXT2
Y EXT2
C EXT2
Y EXT4
C EXT3
Y EXT3
RE LEV
BE LEV
GND1
GND 2
PAGC ADJ
SAGC ADJ
DET V
SDET
PHASE
SUB COL
FLAT NESS
BAT
FSC 443
PAL 1H
VDLY
DELAY
TP2
TP4
TP6
TP10
TP12
TP15
TP16
TP17
TP18
TP19
TP67
TP68
TP8

EO


15
16
17
18
19
20
21
COL
BRT1
BRT2
PIC
IC11
CXA1024S
RGB INTERFACE
WHITE BALANCE
IC12
MC14577AF
AMP
IC13
MC14577AF
AMP
IC950
RC78L06A
+6V REG.
IC9
IC30
MC74HC4538F
M.M
IC399
MC74HC4538F
M.M
IC16
SN74HC541NS
BUFFER
R
G
B
+15V
+12V
+9V
+5V
HD
VD
FLM
CLMP
SYS VD
MONI BG
MONI HD
MONI VD
SUB PIX
SUB BRT
R CUT
G CUT
B CUT
R DRV
G DRV
B DRV
H DLY
GND-3
TP20
Q23
Q24
Q25
Q26
Q27
Q29

➡ : VIDEO SIGNAL

➡ : Y SIGNAL

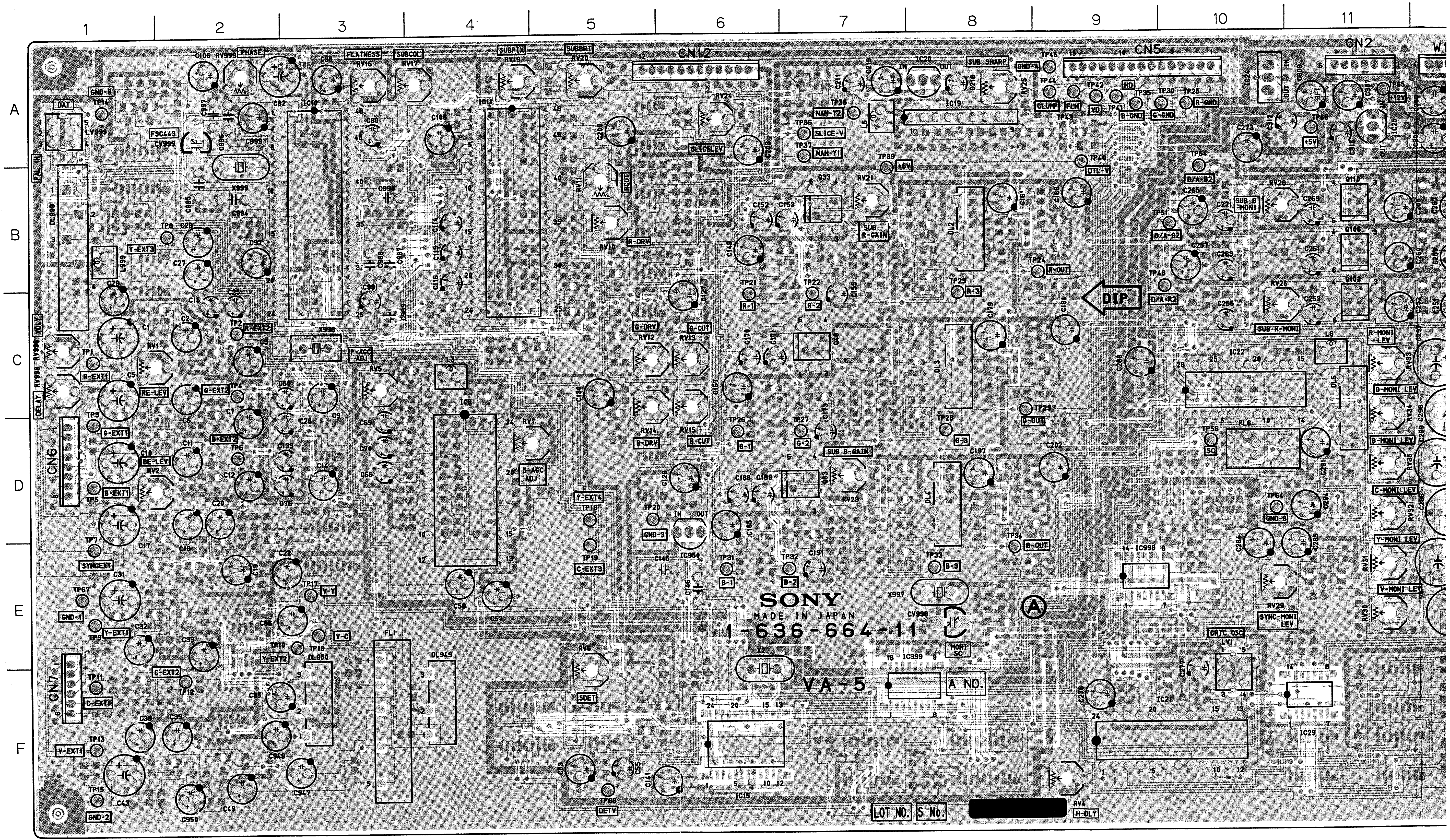
➡ : COLOR SIGNAL

VIDEO VIDEO

VA-5 Board

CN2	A-11	
CN3	B-12	
CN4	C-12	
CN5	A-9	
CN6	D-1	
CN7	F-1	
CN8	D-12	
CN9	D-12	
CN10	E-12	
CN12	A-6	
CV998	E-8	
CV999	A-2	
D1	C-1	S
D3	D-1	S
D4	F-5	S
D5	D-1	S
D7	E-1	S
D10	E-1	S
D14	F-1	S
D16	C-5	S
D19	C-5	S
D20	B-7	S
D21	C-7	S
D22	E-7	S
D23	A-6	S
D24	F-10	S
D950	E-1	S
DL2	B-8	
DL3	C-8	
DL4	D-8	
DL5	C-11	
DL949	F-4	
DL950	F-3	
DL999	B-1	
FL1	F-3	
FL6	D-10	
IC1	E-2	S
IC2	F-2	S
IC4	D-3	S
IC5	D-3	S
IC6	D-4	
IC7	B-1	S
IC9	A-1	S
IC10	A-3	
IC11	A-4	
IC12	C-5	S
IC13	D-5	S
IC14	F-5	S
IC15	F-6	
IC16	F-8	S
IC17	A-5	S
IC18	B-5	S
IC19	A-8	
IC20	A-8	
IC21	F-9	
IC22	C-10	
IC23	D-11	S
IC24	A-10	
IC25	A-11	
IC26	F-11	S
IC27	F-11	S
IC28	F-11	S
IC29	F-11	
IC30	F-7	S
IC31	E-10	S
IC32	F-4	S
IC399	F-7	
IC950	D-6	
IC998	E-9	
LV1	F-10	
LV999	A-1	
Q1	C-2	S
Q2	C-2	S
Q3	D-2	S
Q4	D-2	S
Q5	D-2	S
Q6	D-2	S
Q7	E-2	S
Q8	E-2	S
Q9	D-2	S
Q11	E-2	S
Q12	E-1	S
Q13	E-2	S
Q14	F-1	S
Q15	F-2	S
Q17	F-6	S
Q18	C-4	S
Q19	C-4	S
Q20	A-1	S
Q23	D-5	S
Q24	C-5	S
Q25	B-5	S
Q26	C-4	S
Q27	C-4	S
Q29	C-5	S
Q32	B-7	S
Q33	B-7	
Q34	B-7	S
Q35	B-8	S
Q36	B-8	S
Q37	B-8	S
Q40	B-8	S
Q42	B-9	S
Q43	B-9	S
Q44	C-9	S
Q47	C-6	S
Q48	C-7	
Q49	C-7	S
Q50	C-8	S
Q51	C-8	S
Q52	D-8	S
Q55	C-8	S
Q57	C-9	S
Q58	C-9	S
Q59	D-9	S
Q62	D-6	S
Q63	D-7	
Q64	D-7	S
Q65	D-7	S
Q66	D-7	S
Q67	E-7	S
Q70	D-8	S
Q72	D-9	S
Q73	D-9	S
Q74	E-8	S
Q77	A-7	S
Q80	A-8	S
Q81	A-9	S
Q82	A-9	S
Q84	A-1	S
Q101	C-12	S
Q102	C-11	
Q103	C-10	S
Q104	C-10	S
Q105	B-12	S
Q106	B-11	
Q107	B-10	S
Q108	B-10	S
Q109	B-12	S
Q110	B-11	
Q111	B-10	S
Q112	B-10	S
Q113	D-10	S
Q114	D-10	S
Q115	D-10	S
Q116	D-9	S
Q117	E-11	S
Q118	E-11	S
Q949	F-2	S
Q950	F-2	S
Q998	E-8	S
Q999	B-1	S
RV1	C-1	
RV2	D-1	
RV4	F-9	
RV5	C-3	
RV6	E-5	
RV7	D-4	
RV10	B-5	
RV11	B-5	
RV12	C-5	
RV13	C-6	
RV14	C-5	
RV15	C-6	
RV16	A-3	
RV17	A-4	
RV19	A-4	
RV20	A-5	
RV21	B-7	
RV23	D-7	
RV24	A-6	
RV25	A-8	
RV26	C-10	
RV28	B-10	
RV29	E-10	
RV30	E-11	
RV31	E-11	
RV32	D-11	
RV33	C-11	
RV34	D-11	
RV35	D-11	
RV996	C-1	
RV998	C-1	
RV999	A-2	
TP1	C-1	
TP2	C-2	
TP3	D-1	
TP4	C-2	
TP5	D-1	
TP6	D-2	
TP7	E-1	
TP8	B-2	
TP9	E-1	
TP10	E-2	
TP11	F-1	
TP12	F-2	
TP13	F-1	
TP14	A-1	
TP15	F-1	
TP16	E-3	
TP17	E-3	
TP18	D-5	
TP19	E-3	
TP20	D-5	
TP21	C-6	
TP22	C-7	
TP23	C-8	
TP24	B-9	
TP25	A-10	
TP26	D-6	
TP27	D-7	
TP28	D-8	
TP29	C-8	
TP30	A-10	
TP31	E-6	
TP32	E-7	
TP33	E-8	
TP34	E-9	
TP35	A-9	
TP36	A-7	
TP37	A-7	
TP38	A-7	
TP39	A-7	
TP40	A-9	
TP41	A-9	
TP42	A-9	
TP43	A-9	
TP44	A-9	
TP45	A-9	
TP46	C-12	
TP47	C-12	
TP48	B-10	
TP49	C-12	
TP50	B-12	
TP51	B-10	
TP52	B-12	
TP53	B-12	
TP54	A-10	
TP55	B-12	
TP56	D-10	
TP57	D-12	
TP58	D-12	
TP59	E-12	
TP60	D-12	
TP61	C-12	
TP62	C-12	
TP63	D-12	
TP64	D-10	
TP65	A-11	
TP66	A-11	
TP67	E-1	
TP68	F-5	
W1	A-12	
W11	F-12	
X2	F-6	
X997	E-8	
X998	C-3	
X999	B-2	

VA-5 (VIDEO AMP, VIDEO SWITCH)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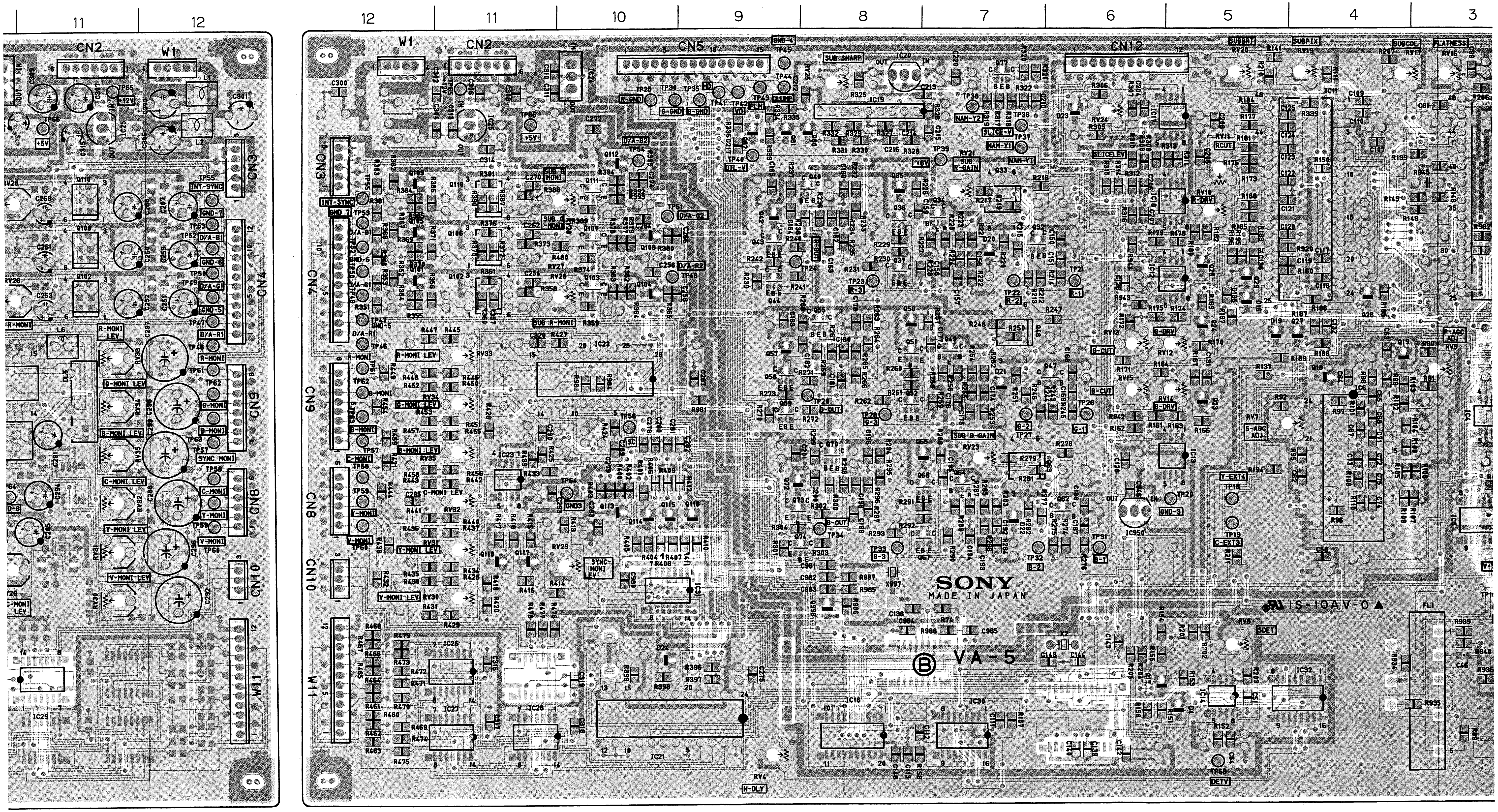
A
B
C
D
E
F
CN12
CN5
CN2
CN6
CN7
SONY
MADE IN JAPAN
1-636-664-11
VA-5
A NO.
LOT NO.
S No.
DIP
PHASE
FLATNESS
SUBCOL
SUBPIX
SUBBRT
SUB SHARP
SLICELEV
SLICE-V
NAM-Y2
NAM-Y1
DTL-V
R-OUT
G-OUT
B-OUT
R-DRV
G-DRV
B-DRV
G-CUT
B-CUT
SUB R-GAIN
SUB B-GAIN
SUB-R-MONI
SUB-B-MONI
D/A-B2
D/A-G2
D/A-R2
R-MONI LEV
G-MONI LEV
B-MONI LEV
C-MONI LEV
Y-MONI LEV
V-MONI LEV
SYNC-MONI LEV
CRTC OSC
MONI SC
H-DLY
P-AGC ADJ
S-AGC ADJ
Y-EXT1
Y-EXT2
Y-EXT3
Y-EXT4
R-EXT1
R-EXT2
G-EXT1
G-EXT2
B-EXT1
B-EXT2
C-EXT1
C-EXT2
C-EXT3
V-EXT1
RE-LEV
BE-LEV
SYNCEXT
GND-1
GND-2
GND-3
GND-4
GND-8
R-GND
G-GND
B-GND
CLUMP
FLM
VD
HD
+5V
+6V
+12V
DAT
PAL IH
FSC443
DELAY
VDLY
SDET
DETV
IC10
IC11
IC19
IC20
IC21
IC22
IC29
IC950
IC998
IC399
IC15
DL949
DL950
FL1
FL6
X2
X997
X998
X999
CV998
CV999
LV999
LV1

VA-5 –
1-636-664-11
UP-3000P


11
12
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11
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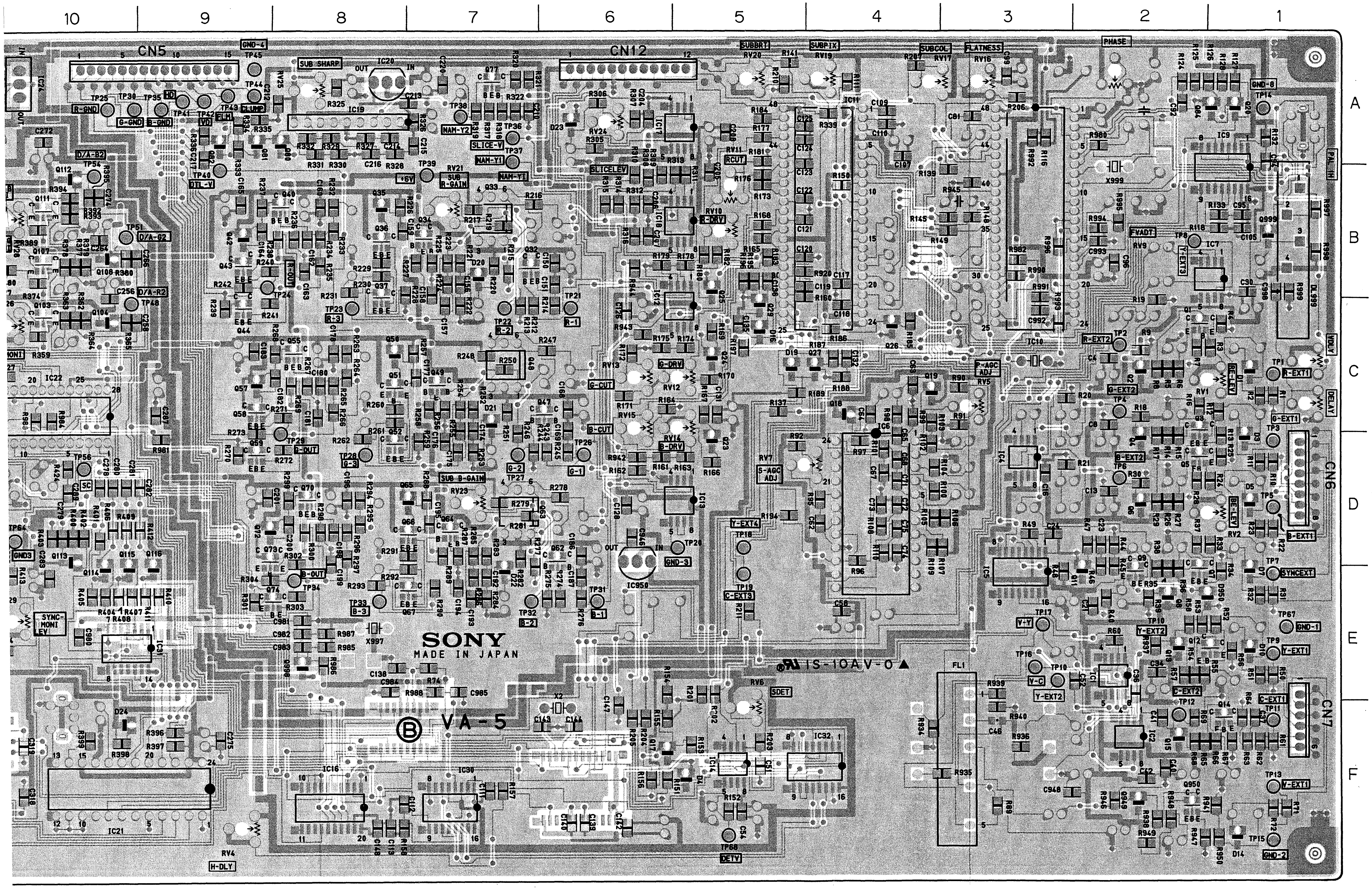
8
7
6
5
4
3
CN2
W1
CN5
CN12
CN3
CN4
CN9
CN8
CN10
W11
SONY
MADE IN JAPAN
VA-5
IS-10AV-0

VA-5 —COMPONENT SIDE—
1-636-664-11
UP-3000P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4
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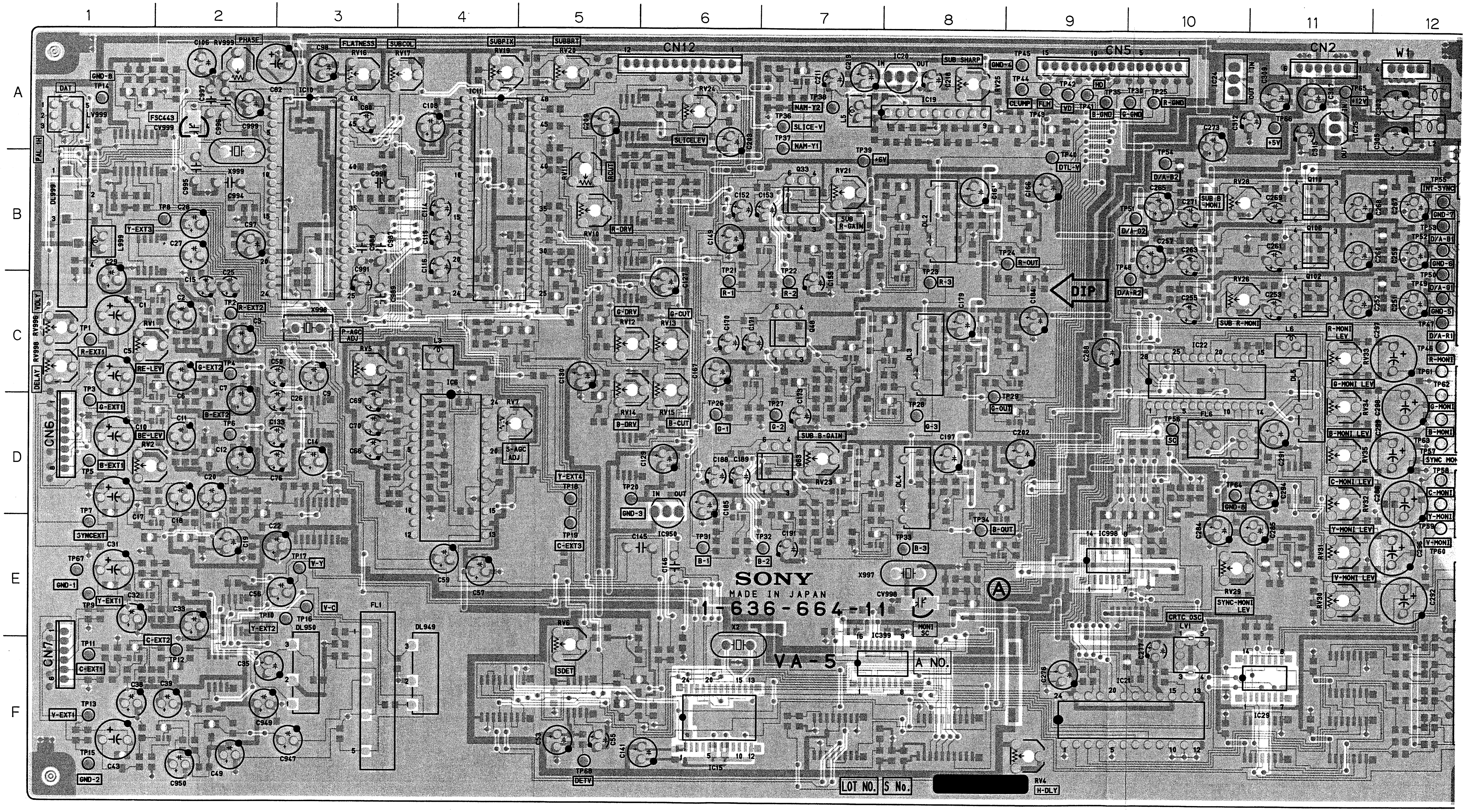
2
1
A
B
C
D
E
F
CN5
CN12
CN6
CN7
SONY
MADE IN JAPAN
Ⓑ VA-5
IS-10AV-0
SUB SHARP
SUBBRT
SUBPIX
SUBCOL
FLATNESS
PHASE
H-DLY
DETV
SDET
GND-1
GND-2
GND-8

VA-5 —SOLDERING SIDE—
1-636-664-11
UP-3000P

- ▨ : Conductor side pattern
- ▨ : Cmponent side pattern

VA-5 (VIDEO AMP, VIDEO SWITCH)


1
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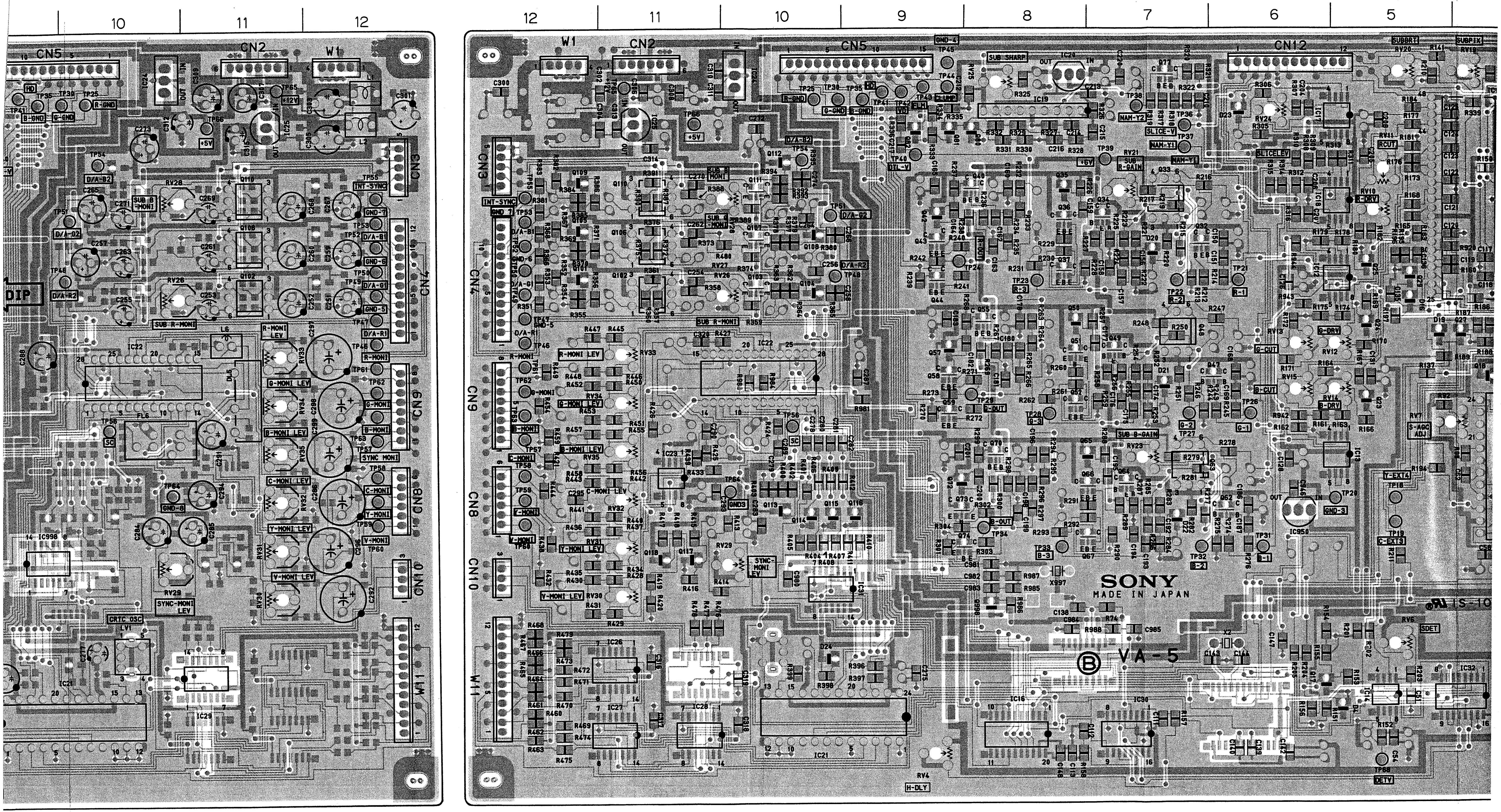
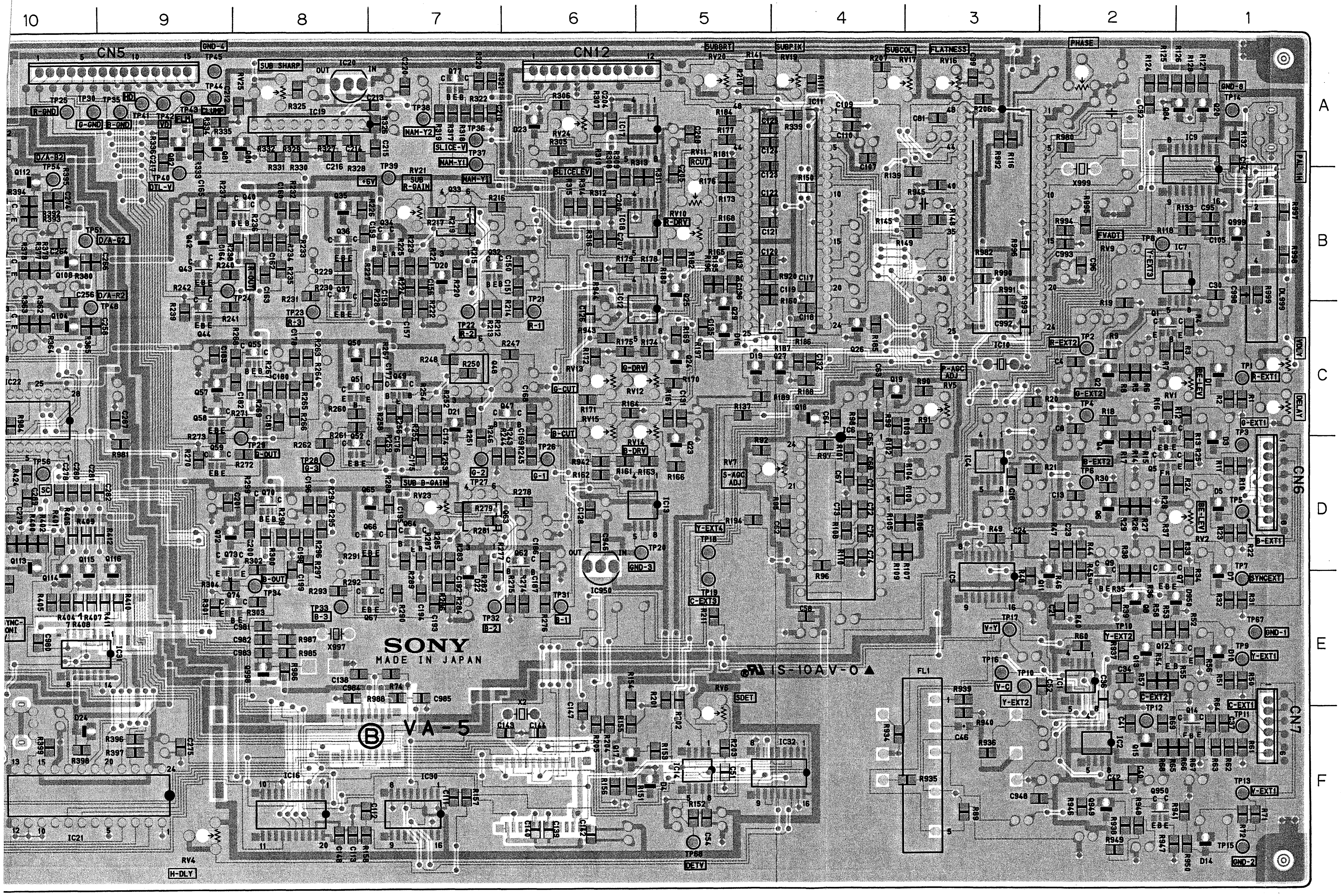
9
10
11
12
A
B
C
D
E
F
CN12
CN5
CN2
W1
CN6
CN7
IC10
IC11
IC6
IC19
IC20
IC22
IC24
IC25
IC998
IC399
IC15
IC21
IC29
IC950
PHASE
FLATNESS
SUBCOL
SUBPIX
SUBBRT
SUB SHARP
SLICELEV
R-DRV
G-DRV
G-CUT
B-DRV
B-CUT
P-AGC ADJ
S-AGC ADJ
SUB R-GAIN
SUB B-GAIN
SUB B-MONI
SUB R-MONI
R-MONI LEV
G-MONI LEV
B-MONI LEV
C-MONI LEV
Y-MONI LEV
V-MONI LEV
SYNC-MONI LEV
CRTC OSC
MONI SC
SDET
DETV
H-DLY
DIP
SONY
MADE IN JAPAN
1-636-664-11
VA-5
A NO.
LOT NO.
S No.
Ⓐ

[redacted]


10
11
12
12
11
10
9
8
7
6
5
CN5
CN2
W1
CN12
CN3
CN4
CN9
CN8
CN10
W11
CN13
DIP
IC22
IC21
IC29
IC16
IC30
IC32
SUB SHARP
SUBBRT
SUBPIX
INT-SYNC
R-MONI LEV
G-MONI LEV
B-MONI LEV
C-MONI LEV
Y-MONI LEV
V-MONI LEV
SYNC-MONI LEV
SUB R-MONI
SUB B-MONI
SUB G-MONI
SUB R-GAIN
SUB B-GAIN
CRTC OSC
H-DLY
SLICE-V
SLICELEV
NAM-Y1
NAM-Y2
R-DRV
G-DRV
B-DRV
R-CUT
G-CUT
B-CUT
Y-EXTS
C-EXTS
S-AGC ADJ
SDET
DETV
SONY
MADE IN JAPAN
Ⓑ VA-5

VA-5 —COMPONENT SIDE—
1-636-664-11
UP-3000P


10
9
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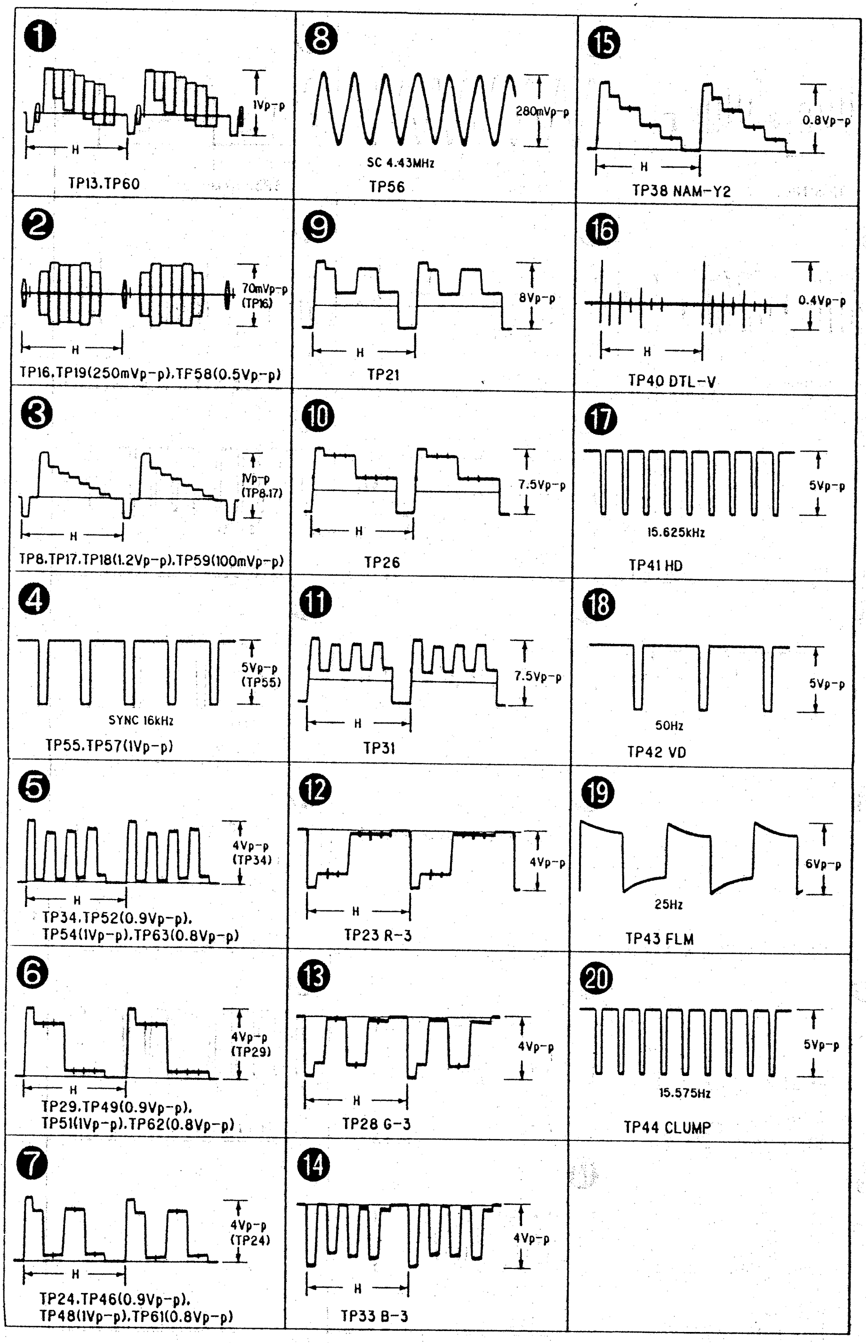
6
5
4
3
2
1
A
B
C
D
E
F
CN5
CN12
CN6
CN7
FL1
SONY
MADE IN JAPAN
Ⓑ VA-5
IS-10AV-0 ▲
SUB SHARP
SUBBRT
SUBPIK
SUBCOL
FLATNESS
PHASE
PAL IN
SLICE-V
SUB R-GAIN
SETCELEV
R-DRV
G-DRV
B-DRV
R-CUT
G-CUT
B-CUT
SUB B-GAIN
S-AGC ADJ
P-AGC ADJ
SYNCEXT
SDET
DETV
H-DLY
DELAY

VA-5 —SOLDERING SIDE—
1-636-664-11
UP-3000P

▨ : Conductor side pattern
▨ : Cmponent side pattern

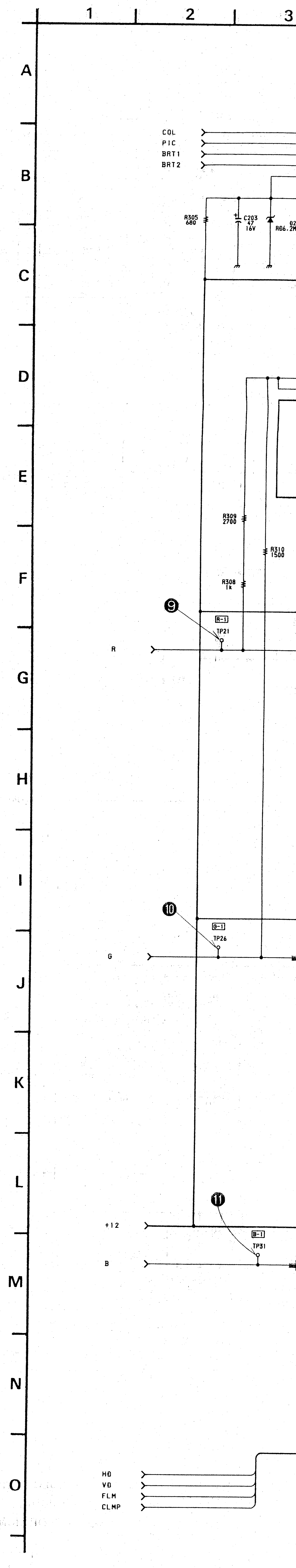
VA-5 Board

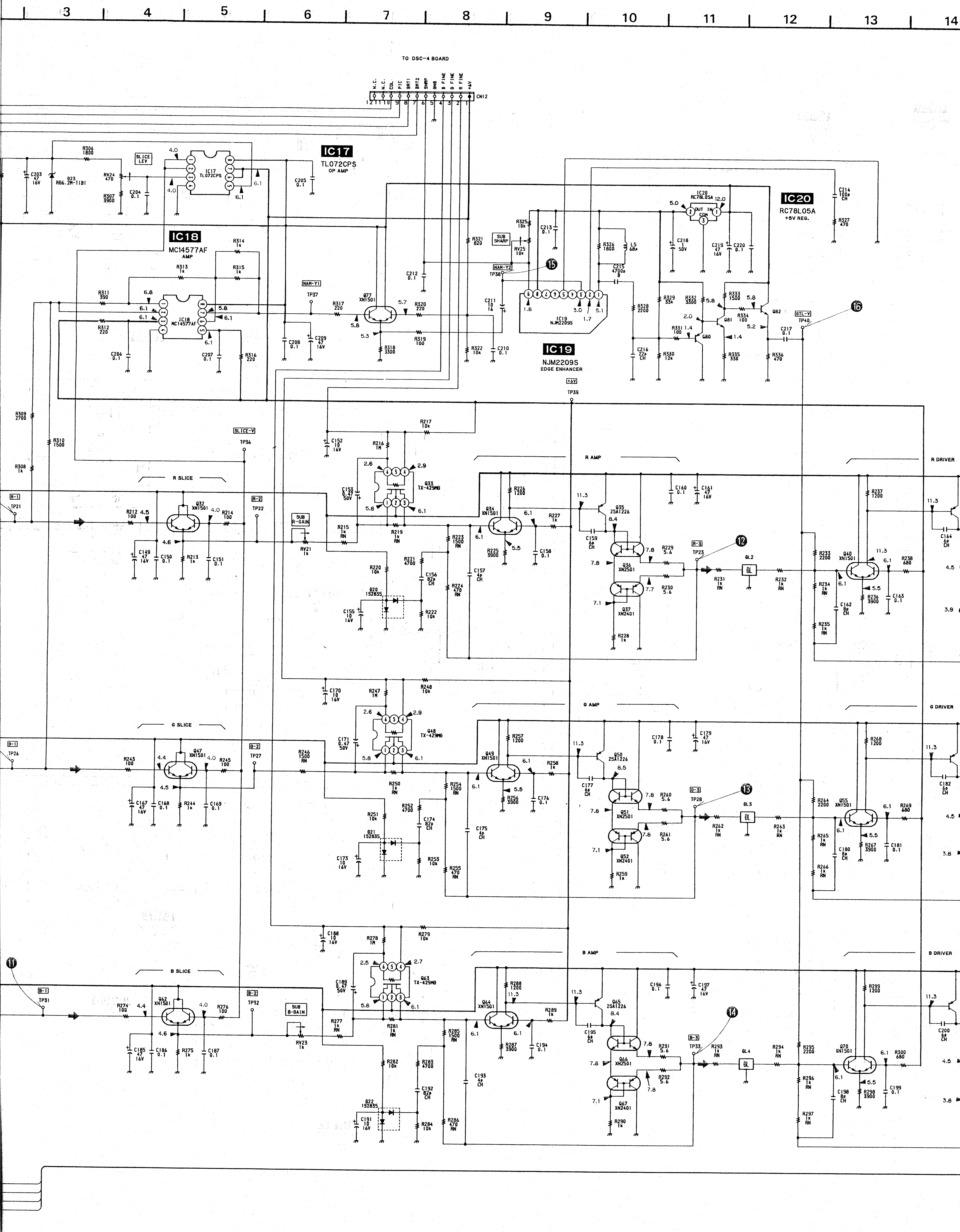


VA-5 Board

CN2	A-11	
CN3	B-12	
CN4	C-12	
CN5	A-9	
CN6	D-1	
CN7	F-1	
CN8	D-12	
CN9	D-12	
CN10	E-12	
CN12	A-6	
CV998	E-8	
CV999	A-2	
D1	C-1	S
D3	D-1	S
D4	F-5	S
D5	D-1	S
D7	E-1	S
D10	E-1	S
D14	F-1	S
D16	C-5	S
D19	C-5	S
D20	B-7	S
D21	C-7	S
D22	E-7	S
D23	A-6	S
D24	F-10	S
D950	E-1	S
DL2	B-8	
DL3	C-8	
DL4	D-8	
DL5	C-11	
DL949	F-4	
DL950	F-3	
DL999	B-1	
FL1	F-3	
FL6	D-10	
IC1	E-2	S
IC2	F-2	S
IC4	D-3	S
IC5	D-3	S
IC6	D-4	
IC7	B-1	S
IC9	A-1	S
IC10	A-3	
IC11	A-4	
IC12	C-5	S
IC13	D-5	S
IC14	F-5	S
IC15	F-6	
IC16	F-8	S
IC17	A-5	S
IC18	B-5	S
IC19	A-8	
IC20	A-8	
IC21	F-9	
IC22	C-10	
IC23	D-11	S
IC24	A-10	
IC25	A-11	
IC26	F-11	S
IC27	F-11	S
IC28	F-11	S
IC29	F-11	
IC30	F-7	S
IC31	E-10	S
IC32	F-4	S
IC399	F-7	
IC950	D-6	
IC998	E-9	
LV1	F-10	
LV999	A-1	
Q1	C-2	S
Q2	C-2	S
Q3	D-2	S
Q4	D-2	S
Q5	D-2	S
Q6	D-2	S
Q7	E-2	S
Q8	E-2	S
Q9	D-2	S
Q11	E-2	S
Q12	E-1	S
Q13	E-2	S
Q14	F-1	S
Q15	F-2	S
Q17	F-6	S
Q18	C-4	S
Q19	C-4	S
Q20	A-1	S
Q23	D-5	S
Q24	C-5	S
Q25	B-5	S
Q26	C-4	S
Q27	C-4	S
Q29	C-5	S
Q32	B-7	S
Q33	B-7	
Q34	B-7	S
Q35	B-8	S
Q36	B-8	S
Q37	B-8	S
Q40	B-8	S
Q42	B-9	S
Q43	B-9	S
Q44	C-9	S
Q47	C-6	S
Q48	C-7	
Q49	C-7	S
Q50	C-8	S
Q51	C-8	S
Q52	D-8	S
Q55	C-8	S
Q57	C-9	S
Q58	C-9	S
Q59	D-9	S
Q62	D-6	S
Q63	D-7	
Q64	D-7	S
Q65	D-7	S
Q66	D-7	S
Q67	E-7	S
Q70	D-8	S
Q72	D-9	S
Q73	D-9	S
Q74	E-8	S
Q77	A-7	S
Q80	A-8	S
Q81	A-9	S
Q82	A-9	S
Q84	A-1	S
Q101	C-12	S
Q102	C-11	
Q103	C-10	S
Q104	C-10	S
Q105	B-12	S
Q106	B-11	
Q107	B-10	S
Q108	B-10	S
Q109	B-12	S
Q110	B-11	
Q111	B-10	S
Q112	B-10	S
Q113	D-10	S
Q114	D-10	S
Q115	D-10	S
Q116	D-9	S
Q117	E-11	S
Q118	E-11	S
Q949	F-2	S
Q950	F-2	S
Q998	E-8	S
Q999	B-1	S
RV1	C-1	
RV2	D-1	
RV4	F-9	
RV5	C-3	
RV6	E-5	
RV7	D-4	
RV10	B-5	
RV11	B-5	
RV12	C-5	
RV13	C-6	
RV14	C-5	
RV15	C-6	
RV16	A-3	
RV17	A-4	
RV19	A-4	
RV20	A-5	
RV21	B-7	
RV23	D-7	
RV24	A-6	
RV25	A-8	
RV26	C-10	
RV28	B-10	
RV29	E-10	
RV30	E-11	
RV31	E-11	
RV32	D-11	
RV33	C-11	
RV34	D-11	
RV35	D-11	
RV996	C-1	
RV998	C-1	
RV999	A-2	
TP1	C-1	
TP2	C-2	
TP3	D-1	
TP4	C-2	
TP5	D-1	
TP6	D-2	
TP7	E-1	
TP8	B-2	
TP9	E-1	
TP10	E-2	
TP11	F-1	
TP12	F-2	
TP13	F-1	
TP14	A-1	
TP15	F-1	
TP16	E-3	
TP17	E-3	
TP18	D-5	
TP19	E-3	
TP20	D-5	
TP21	C-6	
TP22	C-7	
TP23	C-8	
TP24	B-9	
TP25	A-10	
TP26	D-6	
TP27	D-7	
TP28	D-8	
TP29	C-8	
TP30	A-10	
TP31	E-6	
TP32	E-7	
TP33	E-8	
TP34	E-9	
TP35	A-9	
TP36	A-7	
TP37	A-7	
TP38	A-7	
TP39	A-7	
TP40	A-9	
TP41	A-9	
TP42	A-9	
TP43	A-9	
TP44	A-9	
TP45	A-9	
TP46	C-12	
TP47	C-12	
TP48	B-10	
TP49	C-12	
TP50	B-12	
TP51	B-10	
TP52	B-12	
TP53	B-12	
TP54	A-10	
TP55	B-12	
TP56	D-10	
TP57	D-12	
TP58	D-12	
TP59	E-12	
TP60	D-12	
TP61	C-12	
TP62	C-12	
TP63	D-12	
TP64	D-10	
TP65	A-11	
TP66	A-11	
TP67	E-1	
TP68	F-5	
W1	A-12	
W11	F-12	
X2	F-6	
X997	E-8	
X998	C-3	
X999	B-2	

VA-5 (2/3) (VIDEO AMP, VIDEO SWI




3
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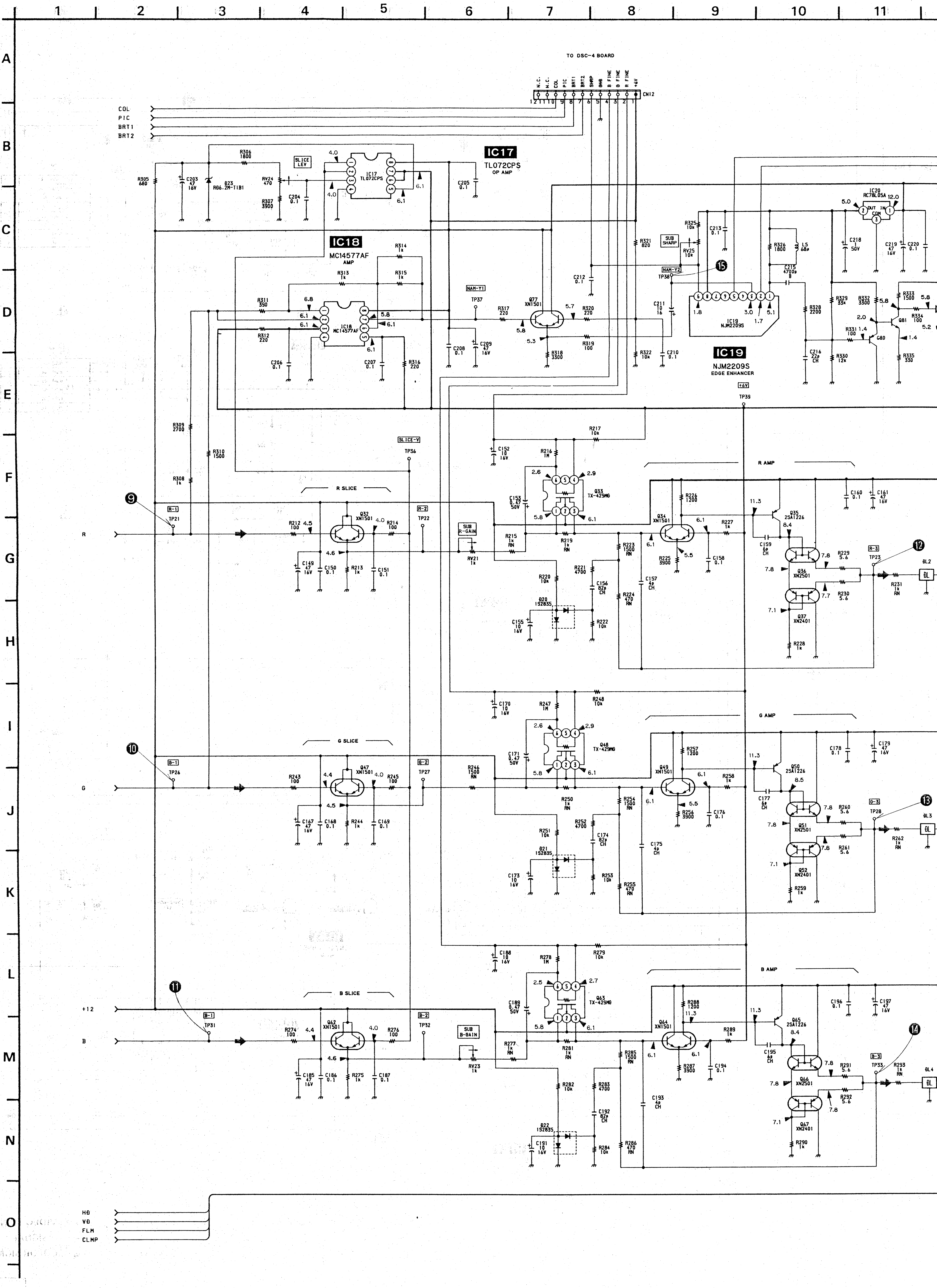
14
TO DSC-4 BOARD
N.C.
N.C.
COL
PIC
BRT1
BRT2
SHRP
GND
B FINE
G FINE
R FINE
+6V
CN12
IC17
TL072CPS
OP AMP
SLICE LEV
R306 1800
C203 47 16V
D23 RD6.2M-T1B1
RV24 470
R307 3900
C204 0.1
C205 0.1
IC18
MC14577AF
AMP
R314 1k
R313 1k
R315 1k
R311 390
R312 220
C206 0.1
C207 0.1
R316 220
NAM-Y1
TP37
R317 220
Q77 XN1501
R320 220
R319 100
R318 3300
C208 0.1
C209 47 16V
C212 0.1
R321 820
SUB SHARP
RV25 10k
R325 10k
C213 0.1
NAM-Y2
TP38
C211 10 16
R322 10k
C210 0.1
IC19
NJM2209S
EDGE ENHANCER
R326 1800
L5 68μ
C215 4700p B
R328 2200
C216 22p CH
IC20
RC78L05A
+5V REG.
C218 1 50V
C219 47 16V
C220 0.1
C214 100p CH
R327 470
R329 33k
R332 3300
R333 1500
R334 100
R331 100
R330 12k
R335 330
R336 470
Q80
Q81
Q82
C217 0.1
DTL-V
TP40
+6V
TP39
R309 2700
R310 1500
R308 1k
SLICE-V
TP36
R SLICE
R-1
TP21
R212 100
Q32 XN1501
R214 100
R-2
TP22
C149 47 16V
C150 0.1
R213 1k
C151 0.1
SUB R-GAIN
RV21 1k
C152 10 16V
R216 1M
R217 10k
Q33 TX-429MG
C153 0.47 50V
R215 1k RN
R219 1k RN
R220 10k
D20 1S2835
C155 10 16V
R221 4700
C156 82p CH
R222 10k
R223 1500 RN
R224 470 RN
C157 4p CH
Q34 XN1501
R225 3900
R226 1200
R227 1k
C158 0.1
R AMP
Q35 2SA1226
C159 6p CH
Q36 XN2501
Q37 XN2401
R228 1k
R229 5.6
R230 5.6
C160 0.1
C161 47 16V
R-3
TP23
R231 1k RN
BL2
R232 1k RN
R DRIVER
R237 1200
R233 2200
Q40 XN1501
R238 680
R234 1k RN
R235 1k RN
C162 8p CH
R236 3900
C163 0.1
C164 6p CH
G SLICE
G-1
TP26
R243 100
Q47 XN1501
R245 100
G-2
TP27
C167 47 16V
C168 0.1
R244 1k
C169 0.1
R246 1500 RN
C170 10 16V
R247 1M
R248 10k
Q48 TX-429MG
C171 0.47 50V
R250 1k RN
R251 10k
D21 1S2835
C173 10 16V
R252 4700
C174 82p CH
R253 10k
R254 1500 RN
R255 470 RN
C175 4p CH
Q49 XN1501
R256 3900
R257 1200
R258 1k
C176 0.1
G AMP
Q50 2SA1226
C177 6p CH
Q51 XN2501
Q52 XN2401
R259 1k
R260 5.6
R261 5.6
C178 0.1
C179 47 16V
G-3
TP28
R262 1k RN
BL3
R263 1k RN
G DRIVER
R268 1200
R264 2200
Q55 XN1501
R269 680
R265 1k RN
R266 1k RN
C180 8p CH
R267 3900
C181 0.1
C182 6p CH
B SLICE
B-1
TP31
R274 100
Q62 XN1501
R276 100
B-2
TP32
C185 47 16V
C186 0.1
R275 1k
C187 0.1
SUB B-GAIN
RV23 1k
C188 10 16V
R278 1M
R279 10k
Q63 TX-429MG
C189 0.47 50V
R277 1k RN
R281 1k RN
R282 10k
D22 1S2835
C191 10 16V
R283 4700
C192 82p CH
R284 10k
R285 1500 RN
R286 470 RN
C193 4p CH
Q64 XN1501
R287 3900
R288 1200
R289 1k
C194 0.1
B AMP
Q65 2SA1226
C195 6p CH
Q66 XN2501
Q67 XN2401
R290 1k
R291 5.6
R292 5.6
C196 0.1
C197 47 16V
B-3
TP33
R293 1k RN
BL4
R294 1k RN
B DRIVER
R299 1200
R295 2200
Q70 XN1501
R300 680
R296 1k RN
R297 1k RN
C198 8p CH
R298 3900
C199 0.1
C200 6p CH
⑪
⑫
⑬
⑭
⑮
⑯

VA-5 (2/3) (VIDEO AMP, VIDEO SWITCH)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10
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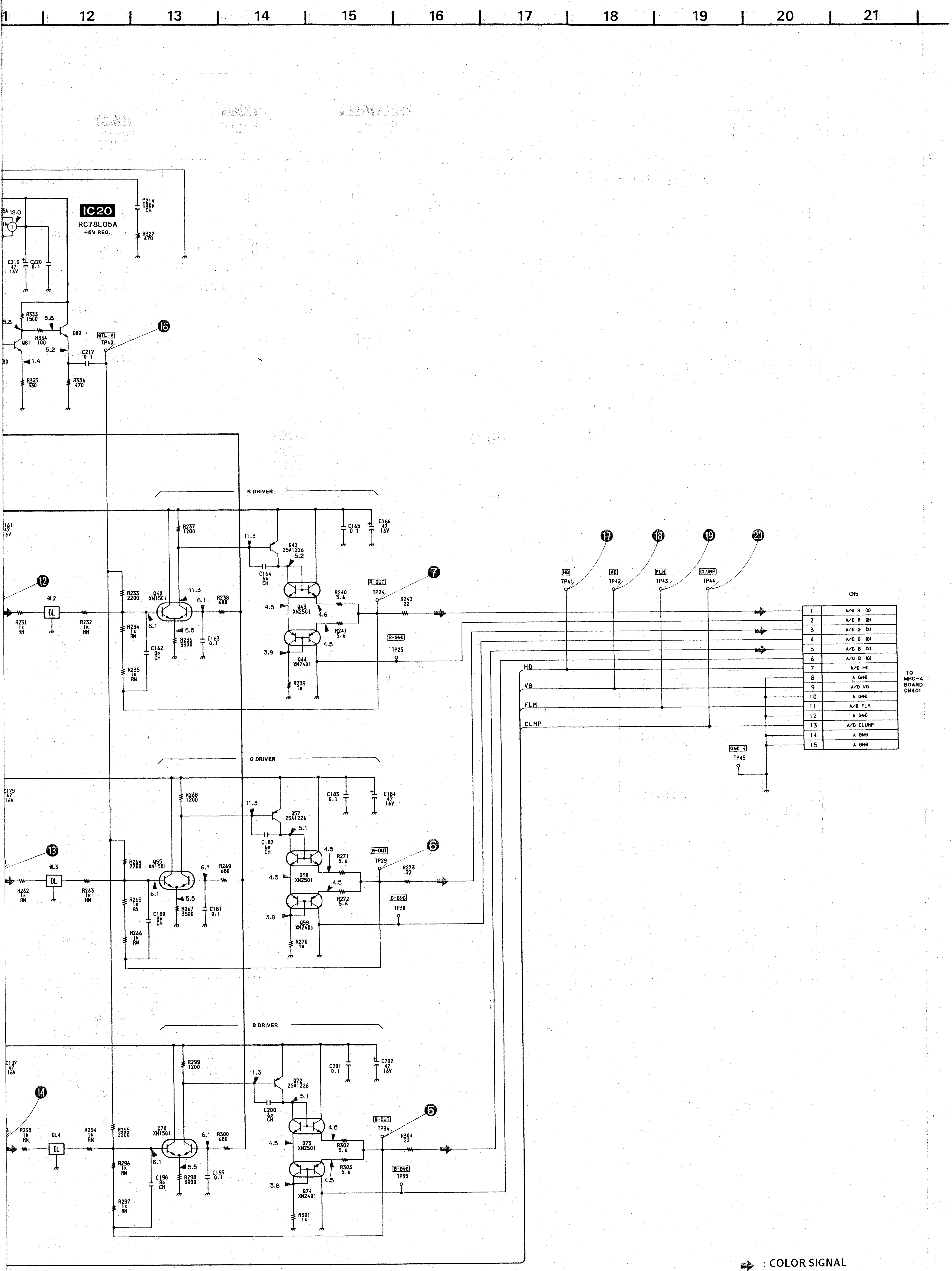
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
TO DSC-4 BOARD
N.C.
N.C.
COL
PIC
BRT1
BRT2
SHRP
BNB
B FINE
G FINE
R FINE
+6V
CN12
COL
PIC
BRT1
BRT2
IC17
TL072CPS
OP AMP
SLICE LEV
R306 1800
R305 680
C203 47 16V
D23 RD6.2M-T1B1
RV24 470
R307 3900
C204 0.1
C205 0.1
IC18
MC14577AF
AMP
R314 1k
R313 1k
R315 1k
R311 390
R312 220
C206 0.1
C207 0.1
R316 220
NAM-Y1
TP37
R317 220
Q77 XN1501
R320 270
R319 100
R318 3300
C208 0.1
C209 47 16V
C212 0.1
R321 820
R322 10k
C210 0.1
C211 10 16
SUB SHARP
RV25 10k
R325 10k
C213 0.1
NAM-Y2
TP38
IC19
NJM2209S
EDGE ENHANCER
R326 1800
L5 68μ
C215 4700p
R328 2200
C216 22p CH
R330 12k
R329 33k
R332 3300
R331 100
Q80
Q81
R333 1500
R334 100
R335 330
IC20 RC78L05A
OUT IN COM
C218 1 50V
C219 47 16V
C220 0.1
+6V
TP39
R309 2700
R310 1500
R308 1k
SLICE-V
TP36
R SLICE
R-1
TP21
R
R212 100
Q32 XN1501
R214 100
R-2
TP22
C149 47 16V
C150 0.1
R213 1k
C151 0.1
SUB R-GAIN
RV21 1k
C152 10 16V
R216 1M
R217 10k
C153 0.47 50V
Q33 TX-429MG
R215 1k RN
R219 1k RN
R220 10k
R221 4700
C156 82p CH
D20 1S2835
C155 10 16V
R222 10k
R AMP
Q34 XN1501
R226 1200
R227 1k
R223 1500 RN
R224 470 RN
C157 4p CH
R225 3900
C158 0.1
Q35 2SA1226
C159 6p CH
Q36 XN2501
Q37 XN2401
R228 1k
R229 5.6
R230 5.6
C160 0.1
C161 47 16V
R-3
TP23
R231 1k RN
⑫
⑨
G SLICE
G-1
TP26
G
R243 100
Q47 XN1501
R245 100
G-2
TP27
C167 47 16V
C168 0.1
R244 1k
C169 0.1
R246 1500 RN
C170 10 16V
R247 1M
R248 10k
C171 0.47 50V
Q48 TX-429MG
R250 1k RN
R251 10k
R252 4700
C174 82p CH
D21 1S2835
C173 10 16V
R253 10k
G AMP
Q49 XN1501
R257 1200
R258 1k
R254 1500 RN
R255 470 RN
C175 4p CH
R256 3900
C176 0.1
Q50 2SA1226
C177 6p CH
Q51 XN2501
Q52 XN2401
R259 1k
R260 5.6
R261 5.6
C178 0.1
C179 47 16V
G-3
TP28
R262 1k RN
⑬
⑩
B SLICE
B-1
TP31
+12
B
R274 100
Q62 XN1501
R276 100
B-2
TP32
C185 47 16V
C186 0.1
R275 1k
C187 0.1
SUB B-GAIN
RV23 1k
C188 10 16V
R278 1M
R279 10k
C189 0.47 50V
Q63 TX-429MG
R277 1k RN
R281 1k RN
R282 10k
R283 4700
C192 82p CH
D22 1S2835
C191 10 16V
R284 10k
B AMP
Q64 XN1501
R288 1200
R289 1k
R285 1500 RN
R286 470 RN
C193 4p CH
R287 3900
C194 0.1
Q65 2SA1226
C195 6p CH
Q66 XN2501
Q67 XN2401
R290 1k
R291 5.6
R292 5.6
C196 0.1
C197 47 16V
B-3
TP33
R293 1k RN
⑭
⑪
⑮
HD
VD
FLM
CLMP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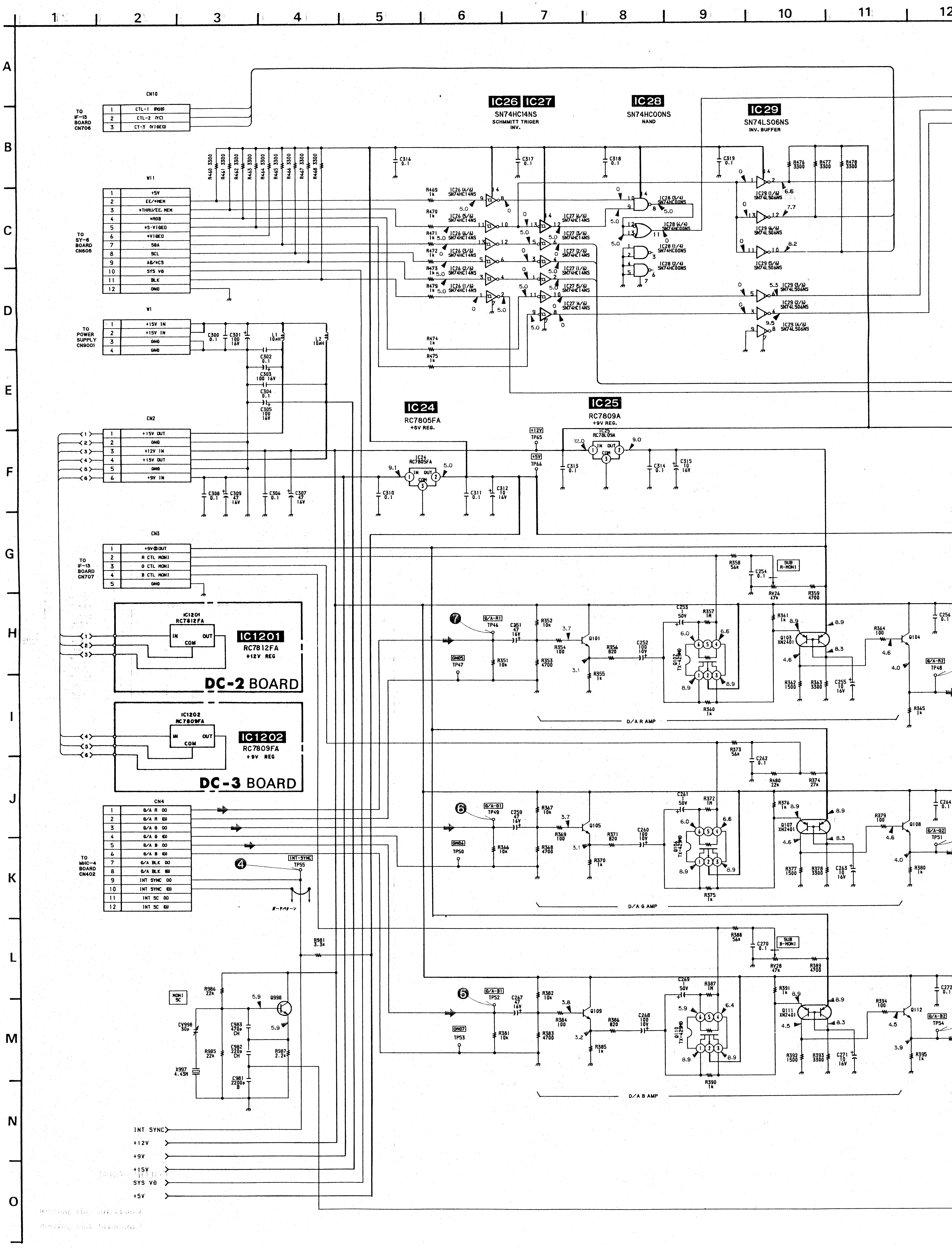
15
16
17
18
19
20
21
IC20
RC78L05A
+5V REG.
C214 100p CH
R327 470
C219 47 16V
C220 0.1
12.0
R333 1500
5.8
Q81
Q82
R334 100
5.2
1.4
C217 0.1
DTL-V
TP40
16
R335 330
R336 470
R DRIVER
R237 1200
11.3
Q42 2SA1226
5.2
C165 0.1
C166 47 16V
C164 6p CH
C161 47 16V
12
DL2
R231 1k RN
R232 1k RN
R233 2200
Q40 XN1501
11.3
6.1
R238 680
R234 1k RN
R236 3900
5.5
C163 0.1
C162 8p CH
R235 1k RN
4.5
Q43 XN2501
4.6
R240 5.6
R241 5.6
3.9
Q44 XN2401
R239 1k
R-OUT
TP24
7
R242 22
R-GND
TP25
17
18
19
20
HD
TP41
VD
TP42
FLM
TP43
CLUMP
TP44
HD
VD
FLM
CLMP
CN5
1 A/D R (X)
2 A/D R (G)
3 A/D G (X)
4 A/D G (G)
5 A/D B (X)
6 A/D B (G)
7 A/D HD
8 A GND
9 A/D VD
10 A GND
11 A/D FLM
12 A GND
13 A/D CLUMP
14 A GND
15 A GND
TO MHC-4 BOARD CN401
GND 4
TP45
G DRIVER
C179 47 16V
R268 1200
11.3
Q57 2SA1226
5.1
C183 0.1
C184 47 16V
C182 6p CH
13
DL3
R262 1k RN
R263 1k RN
R264 2200
Q55 XN1501
6.1
R269 680
R265 1k RN
R267 3900
5.5
C181 0.1
C180 8p CH
R266 1k RN
4.5
Q58 XN2501
R271 5.6
R272 5.6
3.8
Q59 XN2401
R270 1k
G-OUT
TP29
6
R273 22
G-GND
TP30
B DRIVER
C197 47 16V
R299 1200
11.3
Q72 2SA1226
5.1
C201 0.1
C202 47 16V
C200 6p CH
14
DL4
R293 1k RN
R294 1k RN
R295 2200
Q70 XN1501
6.1
R300 680
R296 1k RN
R298 3900
5.5
C199 0.1
C198 8p CH
R297 1k RN
4.5
Q73 XN2501
R302 5.6
R303 5.6
3.8
Q74 XN2401
R301 1k
B-OUT
TP34
5
R304 22
B-GND
TP35

➡ : COLOR SIGNAL

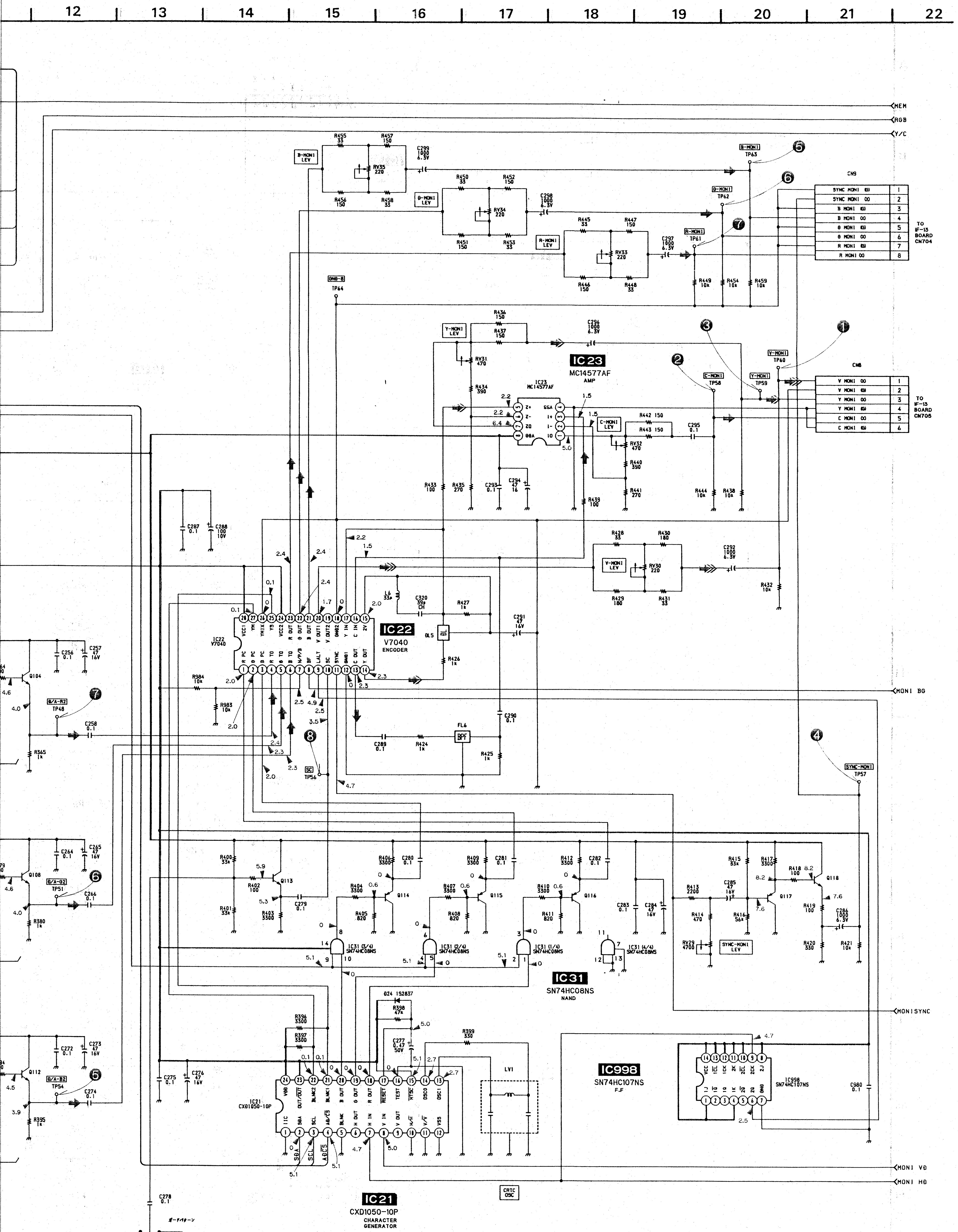
- ▨ : Conductor side pattern
- ▨ : Cmponent side pattern

VA-5 (3/3) (VIDEO AMP, VIDEO SWITCH) DC-2 (+12V REGULATOR) DC-3 (+9V REGULATOR)



IC26 IC27
SN74HC14NS
SCHMITT TRIGER INV.
IC28
SN74HC00NS
NAND
IC29
SN74LS06NS
INV. BUFFER
IC24
RC7805FA
+5V REG.
IC25
RC7809A
+9V REG.
IC1201
RC7812FA
+12V REG
DC-2 BOARD
IC1202
RC7809FA
+9V REG
DC-3 BOARD
CN10
TO IF-13 BOARD CN706
CTL-1 (RGB)
CTL-2 (YC)
CT-3 (VIDEO)
W11
TO SY-6 BOARD CN605
+5V
EE/*MEM
*THRU/EE. MEM
*RGB
*S-VIDEO
*VIDEO
SDA
SCL
AB/*CS
SYS V0
BLK
GND
W1
TO POWER SUPPLY CN9001
+15V IN
+15V IN
GND
GND
CN2
+15V OUT
GND
+12V IN
+15V OUT
GND
+9V IN
CN3
TO IF-13 BOARD CN707
+9V(2)OUT
R CTL MONI
G CTL MONI
B CTL MONI
GND
CN4
TO MHC-4 BOARD CN402
D/A R
D/A R
D/A G
D/A G
D/A B
D/A B
D/A BLK
D/A BLK
INT SYNC
INT SYNC
INT SC
INT SC
INT-SYNC TP55
MONI SC
D/A R AMP
D/A G AMP
D/A B AMP
SUB R-MONI
SUB B-MONI
INT SYNC
+12V
+9V
+15V
SYS V0
+5V

VIDEO VIDEO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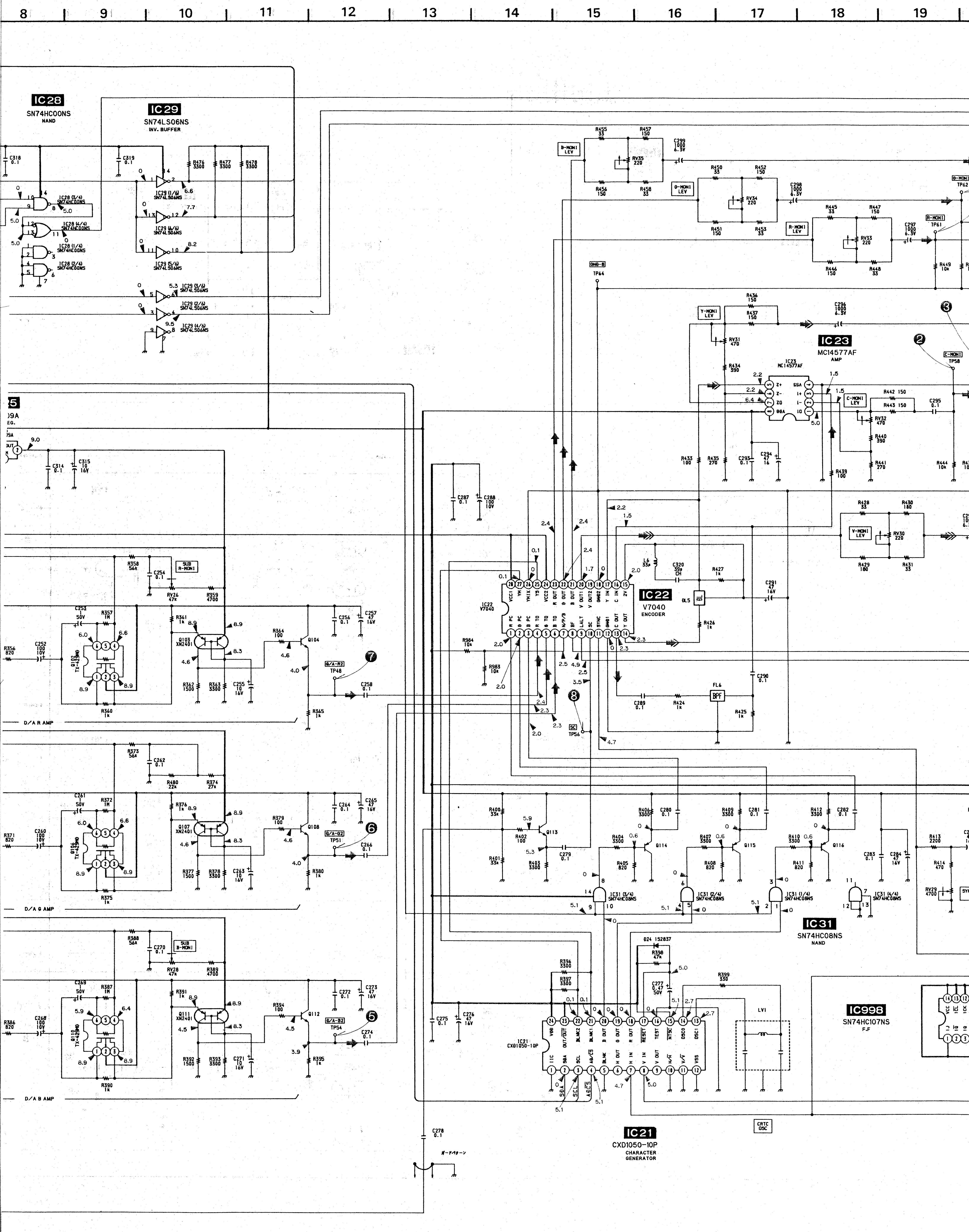
16
17
18
19
20
21
22
MEM
RGB
Y/C
IC23
MC14577AF
AMP
IC22
V7040
ENCODER
IC31
SN74HC08NS
NAND
IC998
SN74HC107NS
F.F
IC21
CXD1050-10P
CHARACTER
GENERATOR
CN9
SYNC MONI (G)
SYNC MONI (X)
B MONI (G)
B MONI (X)
G MONI (G)
G MONI (X)
R MONI (G)
R MONI (X)
TO
IF-13
BOARD
CN704
CN8
V MONI (X)
V MONI (G)
Y MONI (X)
Y MONI (G)
C MONI (X)
C MONI (G)
TO
IF-13
BOARD
CN705
B-MONI LEV
G-MONI LEV
R-MONI LEV
Y-MONI LEV
C-MONI LEV
V-MONI LEV
SYNC-MONI LEV
B-MONI
TP63
G-MONI
TP62
R-MONI
TP61
OMB-B
TP64
Y-MONI
TP60
C-MONI
TP58
Y-MONI
TP59
SYNC-MONI
TP57
B/A-R2
TP48
B/A-G2
TP51
B/A-B2
TP54
SC
TP56
MONI BG
MONI SYNC
MONI VD
MONI HD
FL6
BPF
DL5
LV1
CRTC OSC
Q24 1S2837
Q104
Q108
Q112
Q113
Q114
Q115
Q116
Q117
Q118
C278
0.1

➡➡ : VIDEO SIGNAL

➡➡ : Y SIGNAL

➡ : COLOR SIGNAL


8
9
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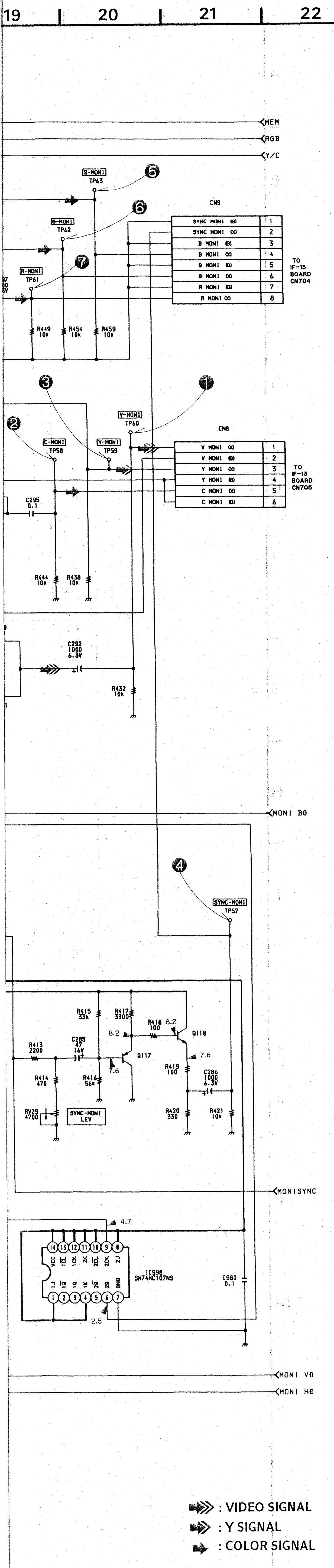
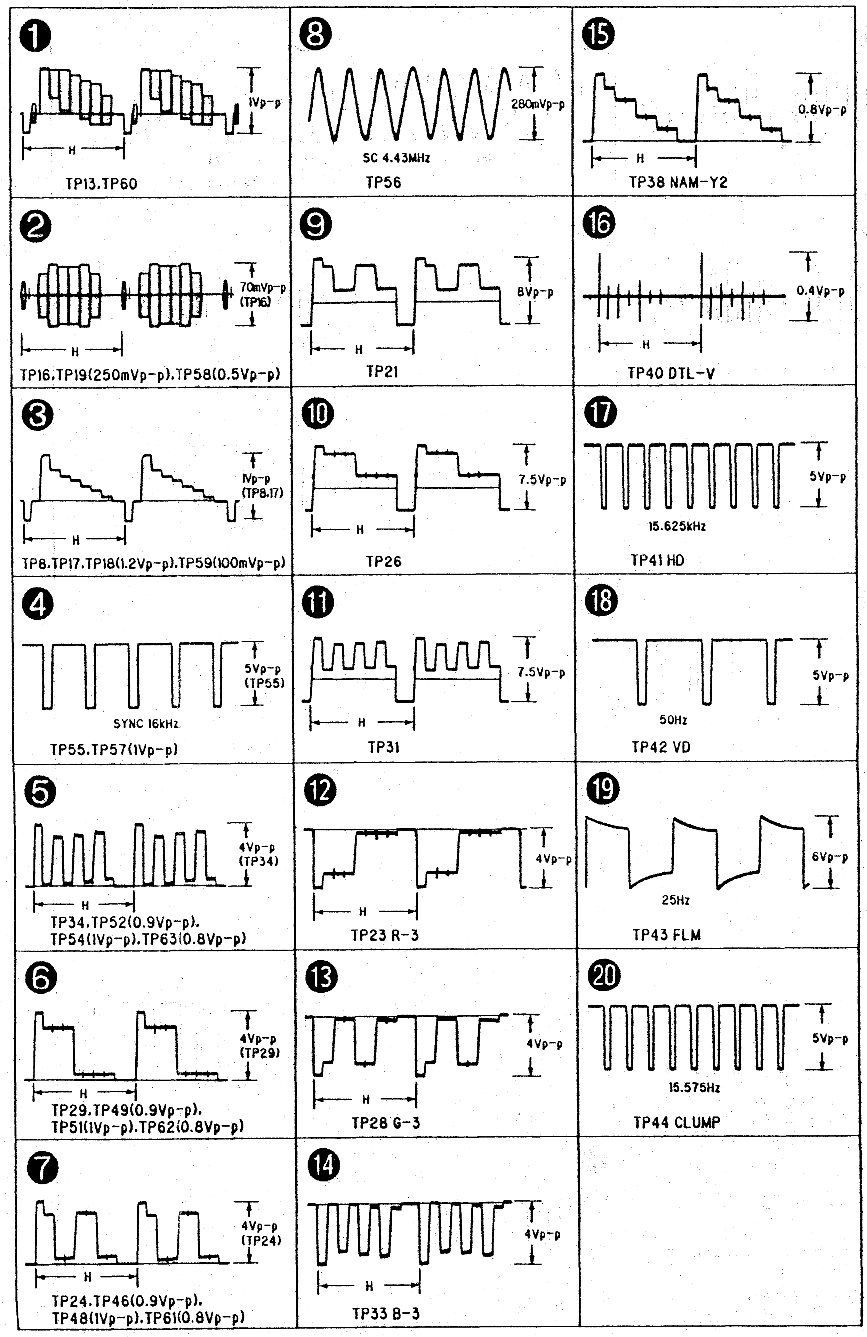
11
12
13
14
15
16
17
18
19
IC28
SN74HC00NS
NAND
IC29
SN74LS06NS
INV. BUFFER
IC23
MC14577AF
AMP
IC22
V7040
ENCODER
IC31
SN74HC08NS
NAND
IC998
SN74HC107NS
F.F
IC21
CXD1050-10P
CHARACTER
GENERATOR
D/A R AMP
D/A G AMP
D/A B AMP
B-MONI LEV
G-MONI LEV
R-MONI LEV
Y-MONI LEV
C-MONI LEV
V-MONI LEV
SUB R-MONI
SUB B-MONI
GND-B
TP44
TP48
TP51
TP54
TP56
TP58
TP61
TP62
FL6
BPF
LV1
DL5
L6
CRTC OSC
Q102 TX-4290
Q103 XN2401
Q104
Q107 XN2401
Q108
Q110 TX-4290
Q111 XN2401
Q112
Q113
Q114
Q115
Q116
D24 1S2837
RV26 47k
RV28 47k
RV29 4700
RV30 220
RV31 470
RV32 470
RV33 220
RV34 220
RV35 220
オーバーパターン


19
20
21
22
MEM
RGB
Y/C
B-MONI
TP63
G-MONI
TP62
R-MONI
TP61
CN9
SYNC MONI (G) 1
SYNC MONI (O) 2
B MONI (G) 3
B MONI (O) 4
G MONI (O) 5
G MONI (G) 6
R MONI (G) 7
R MONI (O) 8
TO IF-13 BOARD CN704
R449 10k
R454 10k
R459 10k
V-MONI
TP60
CN8
C-MONI
TP58
Y-MONI
TP59
V MONI (O) 1
V MONI (G) 2
Y MONI (O) 3
Y MONI (G) 4
C MONI (O) 5
C MONI (G) 6
TO IF-13 BOARD CN705
C295 0.1
R444 10k
R438 10k
C292 1000 6.3V
R432 10k
MONI BG
SYNC-MONI
TP57
R415 33k
R417 3300
R418 100
8.2
8.2
Q118
Q117
7.6
7.6
R413 2200
C285 47 16V
R419 100
C286 1000 6.3V
R414 470
R416 56k
RV29 4700
SYNC-MONI LEV
R420 330
R421 10k
MONI SYNC
4.7
IC998 SN74HC107NS
C980 0.1
2.5
MONI VD
MONI HD
: VIDEO SIGNAL
: Y SIGNAL
: COLOR SIGNAL

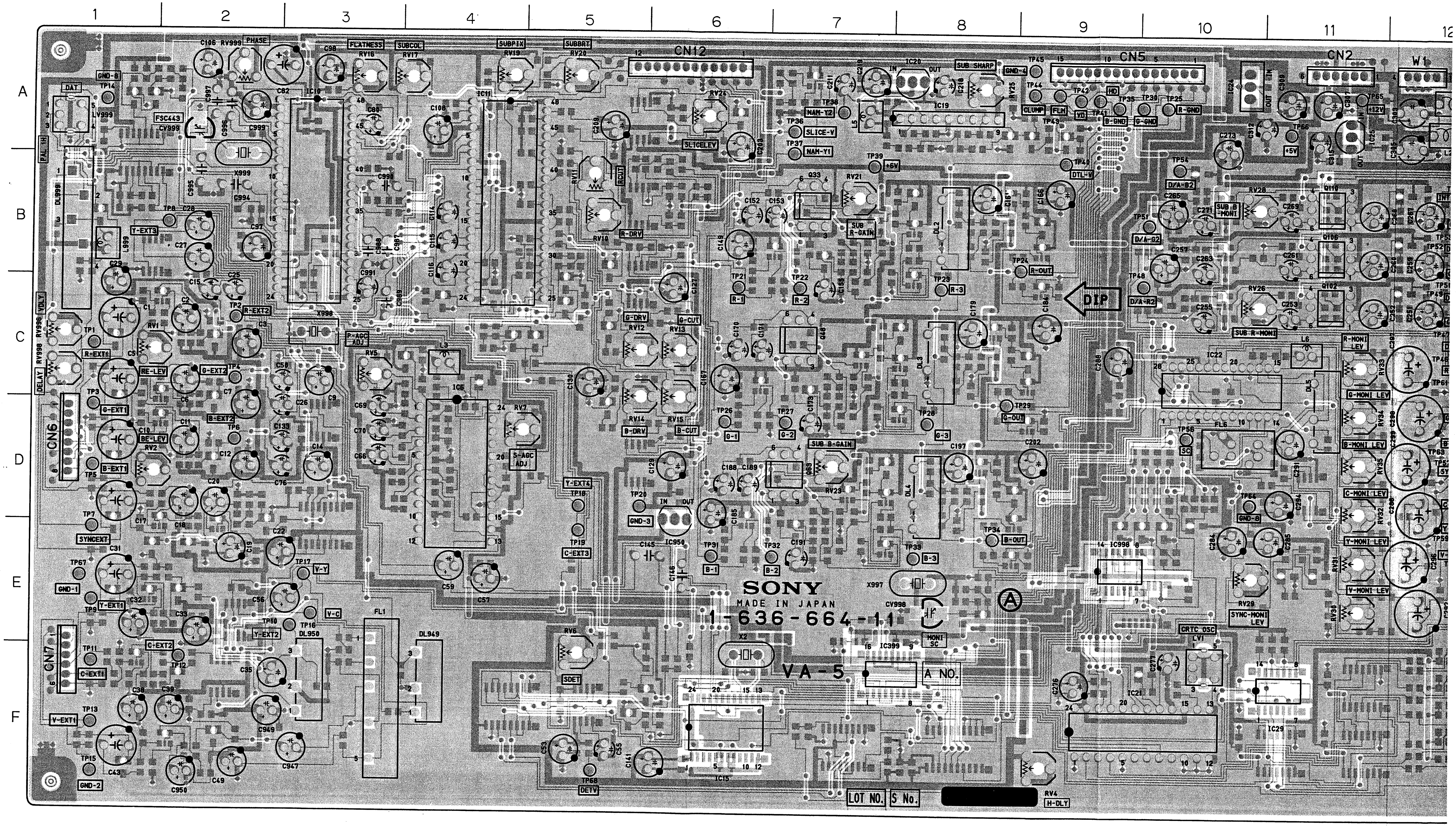
VA-5 Board



VA-5 Board

CN2	A-11	
CN3	B-12	
CN4	C-12	
CN5	A-9	
CN6	D-1	
CN7	F-1	
CN8	D-12	
CN9	D-12	
CN10	E-12	
CN12	A-6	
CV998	E-8	
CV999	A-2	
D1	C-1	S
D3	D-1	S
D4	F-5	S
D5	D-1	S
D7	E-1	S
D10	E-1	S
D14	F-1	S
D16	C-5	S
D19	C-5	S
D20	B-7	S
D21	C-7	S
D22	E-7	S
D23	A-6	S
D24	F-10	S
D950	E-1	S
DL2	B-8	
DL3	C-8	
DL4	D-8	
DL5	C-11	
DL949	F-4	
DL950	F-3	
DL999	B-1	
FL1	F-3	
FL6	D-10	
IC1	E-2	S
IC2	F-2	S
IC4	D-3	S
IC5	D-3	S
IC6	D-4	
IC7	B-1	S
IC9	A-1	S
IC10	A-3	
IC11	A-4	
IC12	C-5	S
IC13	D-5	S
IC14	F-5	S
IC15	F-6	
IC16	F-8	S
IC17	A-5	S
IC18	B-5	S
IC19	A-8	
IC20	A-8	
IC21	F-9	
IC22	C-10	
IC23	D-11	S
IC24	A-10	
IC25	A-11	
IC26	F-11	S
IC27	F-11	S
IC28	F-11	S
IC29	F-11	
IC30	F-7	S
IC31	E-10	S
IC32	F-4	S
IC399	F-7	
IC950	D-6	
IC998	E-9	
LV1	F-10	
LV999	A-1	
Q1	C-2	S
Q2	C-2	S
Q3	D-2	S
Q4	D-2	S
Q5	D-2	S
Q6	D-2	S
Q7	E-2	S
Q8	E-2	S
Q9	D-2	S
Q11	E-2	S
Q12	E-1	S
Q13	E-2	S
Q14	F-1	S
Q15	F-2	S
Q17	F-6	S
Q18	C-4	S
Q19	C-4	S
Q20	A-1	S
Q23	D-5	S
Q24	C-5	S
Q25	B-5	S
Q26	C-4	S
Q27	C-4	S
Q29	C-5	S
Q32	B-7	S
Q33	B-7	
Q34	B-7	S
Q35	B-8	S
Q36	B-8	S
Q37	B-8	S
Q40	B-8	S
Q42	B-9	S
Q43	B-9	S
Q44	C-9	S
Q47	C-6	S
Q48	C-7	
Q49	C-7	S
Q50	C-8	S
Q51	C-8	S
Q52	D-8	S
Q55	C-8	S
Q57	C-9	S
Q58	C-9	S
Q59	D-9	S
Q62	D-6	S
Q63	D-7	
Q64	D-7	S
Q65	D-7	S
Q66	D-7	S
Q67	E-7	S
Q70	D-8	S
Q72	D-9	S
Q73	D-9	S
Q74	E-8	S
Q77	A-7	S
Q80	A-8	S
Q81	A-9	S
Q82	A-9	S
Q84	A-1	S
Q101	C-12	S
Q102	C-11	
Q103	C-10	S
Q104	C-10	S
Q105	B-12	S
Q106	B-11	
Q107	B-10	S
Q108	B-10	S
Q109	B-12	S
Q110	B-11	
Q111	B-10	S
Q112	B-10	S
Q113	D-10	S
Q114	D-10	S
Q115	D-10	S
Q116	D-9	S
Q117	E-11	S
Q118	E-11	S
Q949	F-2	S
Q950	F-2	S
Q998	E-8	S
Q999	B-1	S
RV1	C-1	
RV2	D-1	
RV4	F-9	
RV5	C-3	
RV6	E-5	
RV7	D-4	
RV10	B-5	
RV11	B-5	
RV12	C-5	
RV13	C-6	
RV14	C-5	
RV15	C-6	
RV16	A-3	
RV17	A-4	
RV19	A-4	
RV20	A-5	
RV21	B-7	
RV23	D-7	
RV24	A-6	
RV25	A-8	
RV26	C-10	
RV28	B-10	
RV29	E-10	
RV30	E-11	
RV31	E-11	
RV32	D-11	
RV33	C-11	
RV34	D-11	
RV35	D-11	
RV996	C-1	
RV998	C-1	
RV999	A-2	
TP1	C-1	
TP2	C-2	
TP3	D-1	
TP4	C-2	
TP5	D-1	
TP6	D-2	
TP7	E-1	
TP8	B-2	
TP9	E-1	
TP10	E-2	
TP11	F-1	
TP12	F-2	
TP13	F-1	
TP14	A-1	
TP15	F-1	
TP16	E-3	
TP17	E-3	
TP18	D-5	
TP19	E-3	
TP20	D-5	
TP21	C-6	
TP22	C-7	
TP23	C-8	
TP24	B-9	
TP25	A-10	
TP26	D-6	
TP27	D-7	
TP28	D-8	
TP29	C-8	
TP30	A-10	
TP31	E-6	
TP32	E-7	
TP33	E-8	
TP34	E-9	
TP35	A-9	
TP36	A-7	
TP37	A-7	
TP38	A-7	
TP39	A-7	
TP40	A-9	
TP41	A-9	
TP42	A-9	
TP43	A-9	
TP44	A-9	
TP45	A-9	
TP46	C-12	
TP47	C-12	
TP48	B-10	
TP49	C-12	
TP50	B-12	
TP51	B-10	
TP52	B-12	
TP53	B-12	
TP54	A-10	
TP55	B-12	
TP56	D-10	
TP57	D-12	
TP58	D-12	
TP59	E-12	
TP60	D-12	
TP61	C-12	
TP62	C-12	
TP63	D-12	
TP64	D-10	
TP65	A-11	
TP66	A-11	
TP67	E-1	
TP68	F-5	
W1	A-12	
W11	F-12	
X2	F-6	
X997	E-8	
X998	C-3	
X999	B-2	

VA-5 (VIDEO AMP, VIDEO SWITCH) **DC-2** (+12V REGULATOR) **DC-3** (+9V REGULATOR)


1
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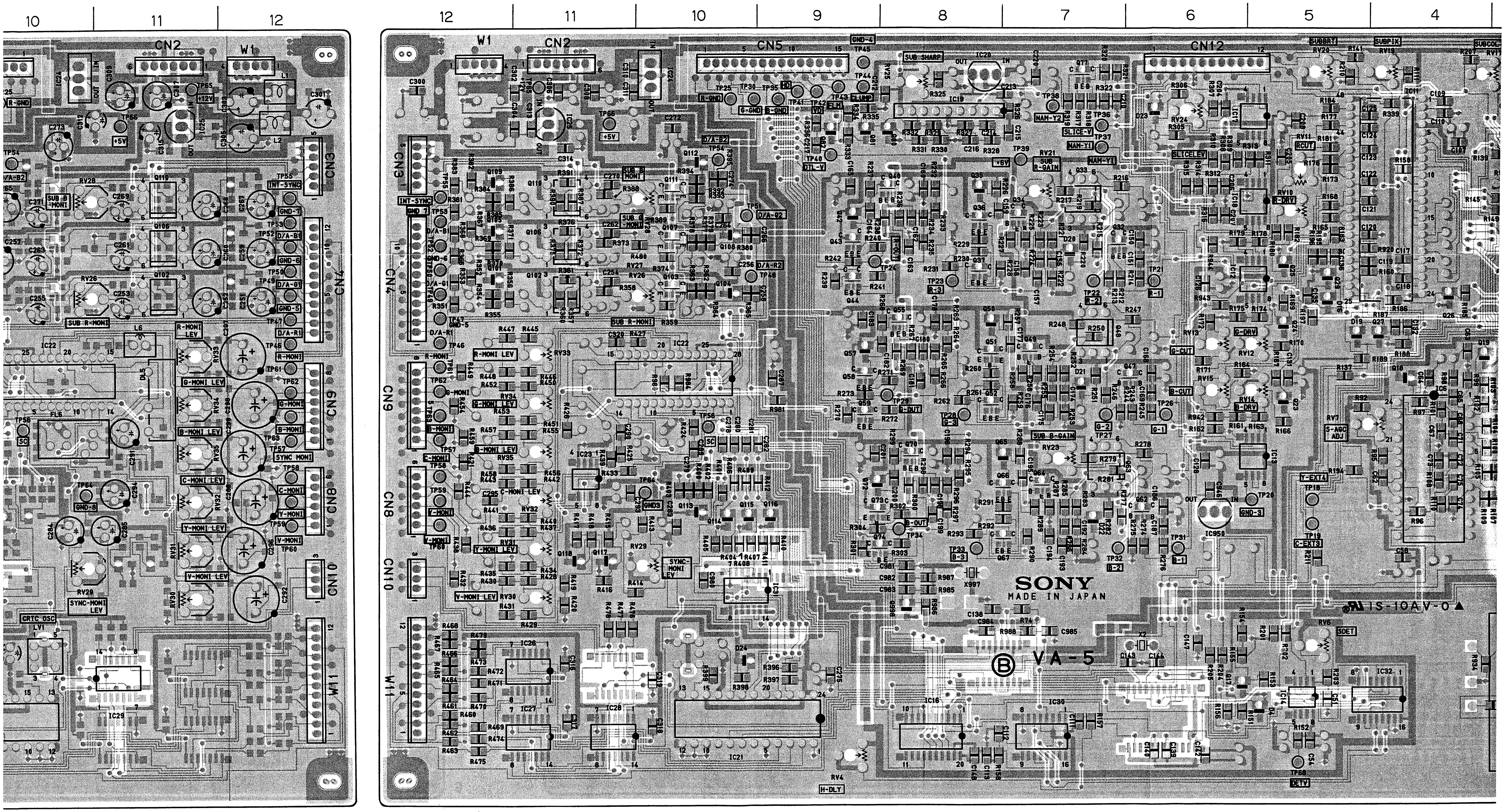
11
12
A
B
C
D
E
F
CN12
CN5
CN2
W1
CN6
CN7
IC10
IC11
IC19
IC20
IC22
IC24
IC25
IC5
IC15
IC21
IC29
IC399
IC950
IC998
PHASE
FLATNESS
SUBCOL
SUBPIX
SUBBRT
SUB SHARP
DAT
FSC443
PAL IH
VOLY
DELAY
P-AGC ADJ
S-AGC ADJ
SLICELEV
SLICE-V
NAM-Y1
NAM-Y2
DTL-V
R-CUT
R-DRV
G-DRV
G-CUT
B-DRV
B-CUT
SUB R-GAIN
SUB B-GAIN
SUB B-MONI
SUB R-MONI
DIP
R-MONI LEV
G-MONI LEV
B-MONI LEV
C-MONI LEV
Y-MONI LEV
V-MONI LEV
SYNC-MONI LEV
CRTC OSC
MONI SC
SDET
DETV
H-DLY
SYNCEXT
GND-1
GND-2
GND-3
SONY
MADE IN JAPAN
1-636-664-11
VA-5
A NO.
LOT NO.
S No.
Ⓐ

VA-5 —COMPO
1-636-664-11
UP-3000P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11
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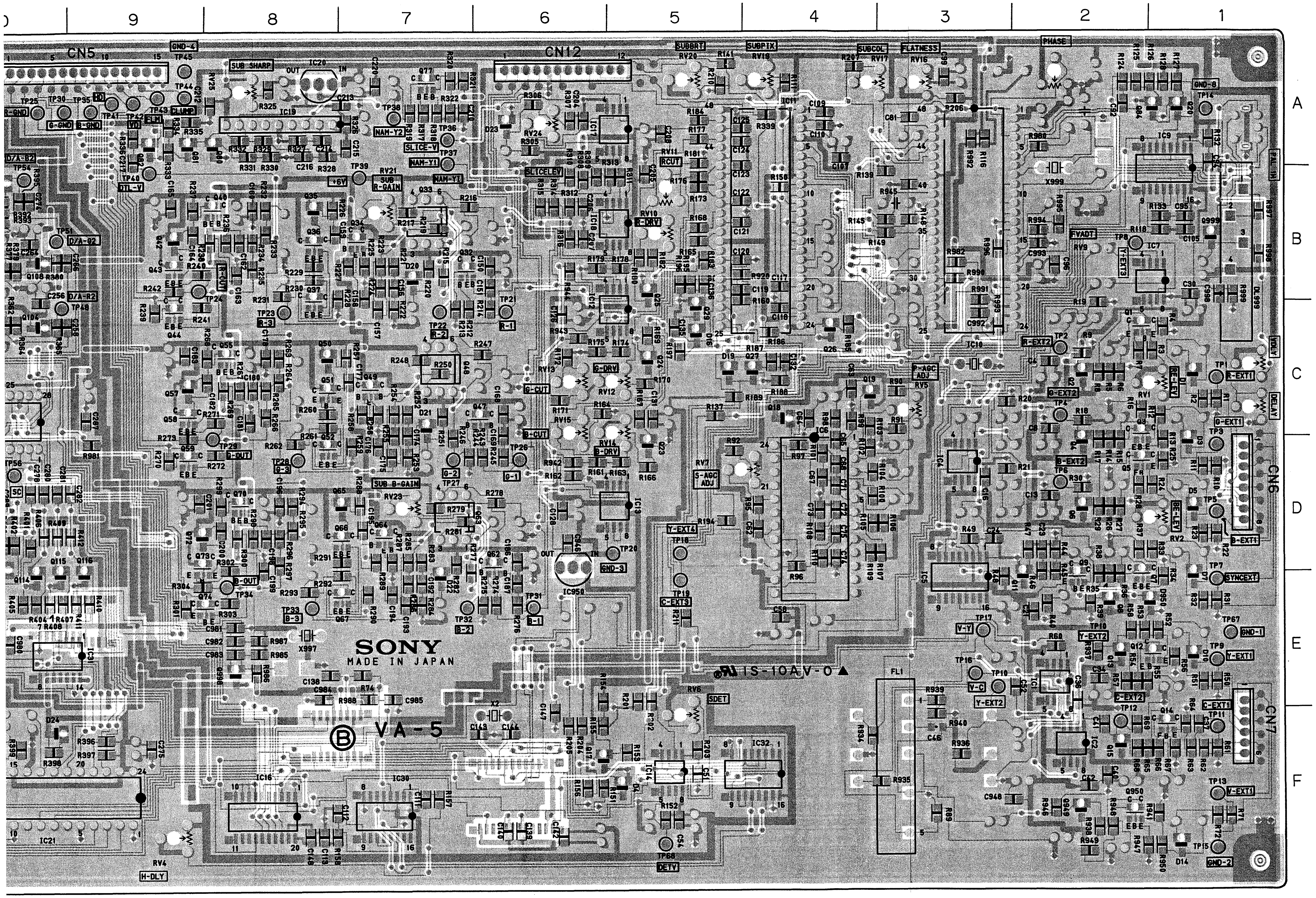
12
11
10
9
8
7
6
5
4
CN2
W1
CN5
CN12
CN3
CN4
CN9
CN8
CN10
W11
IC22
IC29
IC26
IC27
IC28
IC21
IC16
IC30
IC32
IC950
IC19
SONY
MADE IN JAPAN
VA-5
IS-10AV-0
SUB R-MONI
R-MONI LEV
G-MONI LEV
B-MONI LEV
C-MONI LEV
Y-MONI LEV
V-MONI LEV
SYNC-MONI LEV
CRTC OSC
SUB SHARP
SUB G-GAIN
SUB B-GAIN
S-AGC ADJ
H-DLY
SDET
DETV

VA-5 —COMPONENT SIDE—
1-636-664-11
UP-3000P


9
8
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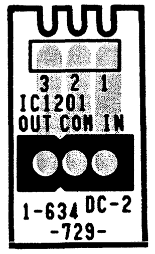
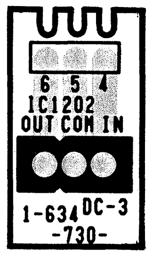
1
A
B
C
D
E
F
CN5
CN12
CN6
CN7
SONY
MADE IN JAPAN
Ⓑ VA-5
IS-10AV-0
SUB SHARP
SUBBRT
SUBPIX
SUBCOL
FLATNESS
PHASE
SUB R-GAIN
SUB B-GAIN
SLICELEV
NAM-Y2
SLICE-V
NAM-Y1
P-AGC ADJ
S-AGC ADJ
H-DLY
DETV
SDET
X997
X999
FL1
IC20
IC950

VA-5 —SOLDERING SIDE—
1-636-664-11
UP-3000P


3 2 1
IC1201
OUT COM IN
1-634 DC-2
-729-

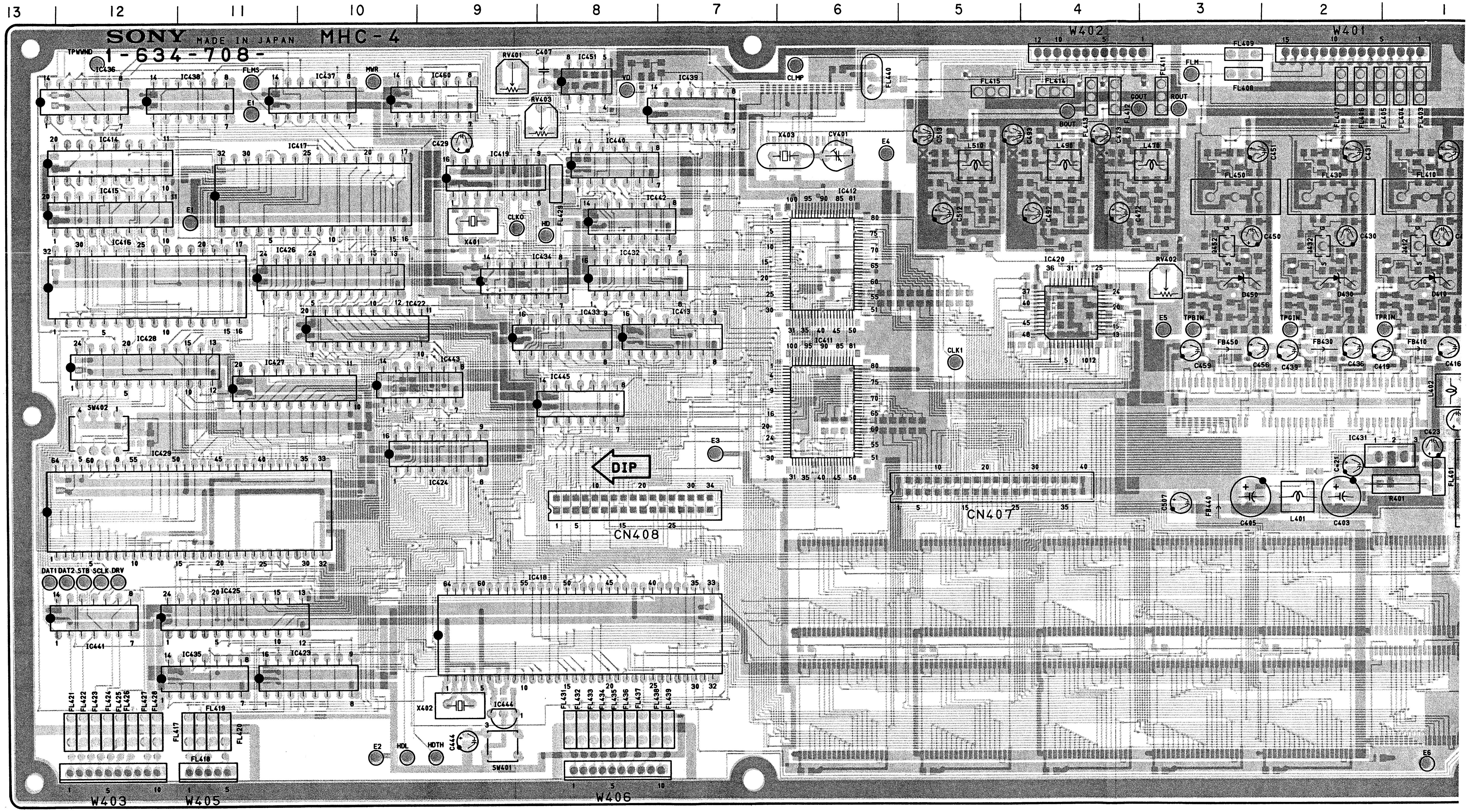
DC-2 —SOLDERING SIDE—
1-634-729-12
UP-3000P


6 5 4
IC1202
OUT COM IN
1-634 DC-3
-730-

DC-3 —SOLDERING SIDE—
1-634-730-12
UP-3000P

- ▨ : Conductor side pattern
- ▨ : Cmponent side pattern

MHC-4 (VIDEO PROCESS)


13
12
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3
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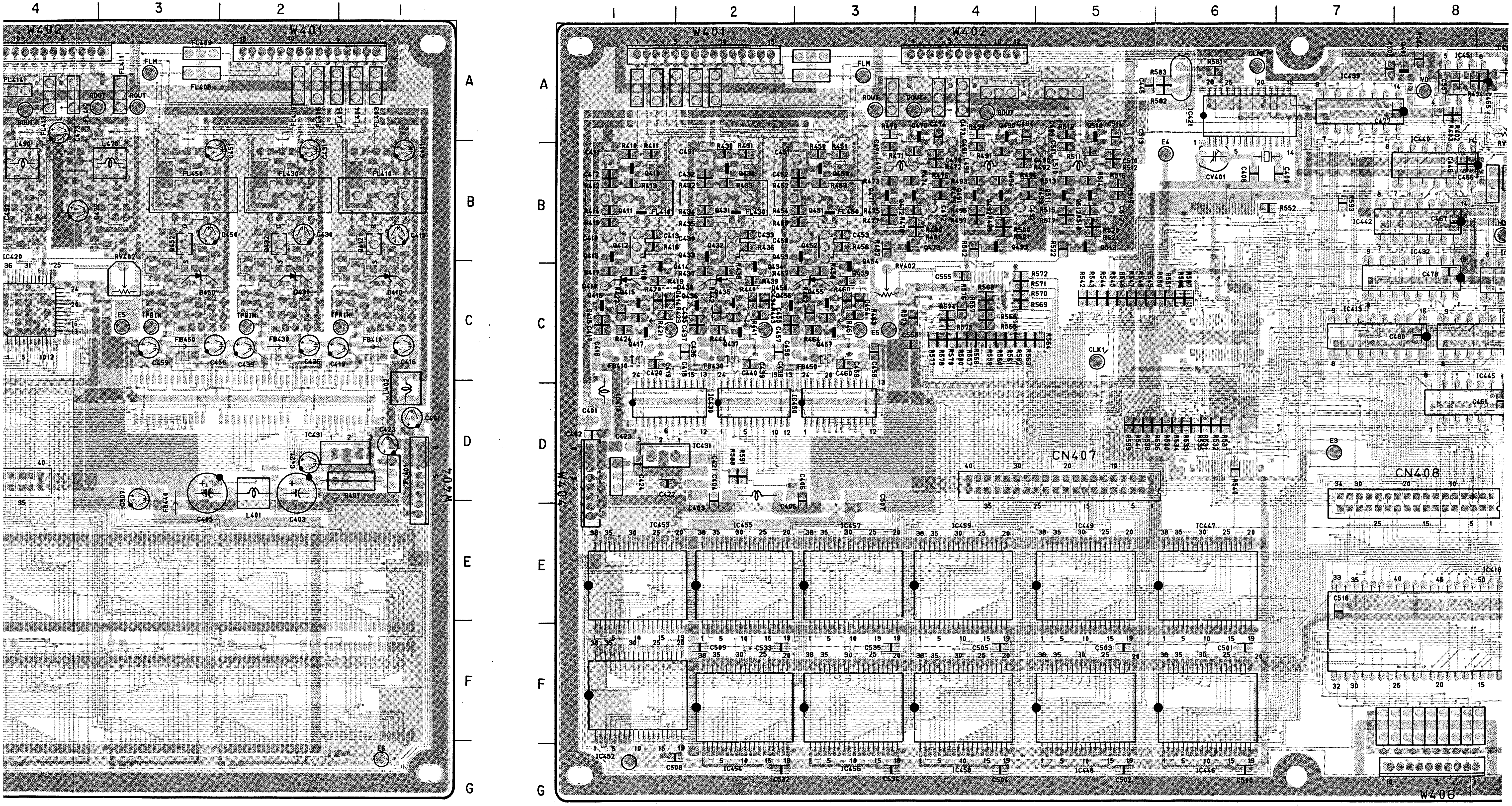
1
SONY MADE IN JAPAN MHC-4
1-634-708-
TPWWND
IC436
IC438
FLMS
IC437
MWR
IC460
RV401
C407
IC451
IC439
CLMP
FL440
W402
W401
FL409
FL408
FL415
FL414
FLM
GOUT
BOUT
ROUT
IC414
IC417
IC415
C429
IC419
RV403
IC440
X403
CV401
E4
L510
L490
L470
FL450
FL430
FL410
E1
X401
CLKO
HD
IC442
IC412
IC416
IC426
IC434
IC432
IC420
RV402
IC422
IC433
IC413
E5
TPBIN
TPGIN
TPRIN
FB450
FB430
FB410
IC428
IC427
IC443
IC411
CLK1
C459
C456
C439
C436
C419
C416
IC445
SW402
IC429
IC424
E3
DIP
IC431
C423
CN408
CN407
C507
FB440
C405
L401
C403
R401
FL401
DAT1
DAT2
STB
SCLK
DRV
IC441
IC425
IC418
IC435
IC423
X402
IC444
C444
E2
HDL
HDTH
SW401
E6
W403
W405
W406
FL417
FL418
FL419
FL420
FL421
FL422
FL423
FL424
FL425
FL426
FL427
FL428
FL431
FL432
FL433
FL434
FL435
FL436
FL437
FL438
FL439

MHC-4 —COMPONENT
1-634-708-12
UP-3000P


W401
W402
W404
W406
CN407
CN408
FLM
ROUT
GOUT
BOUT
CLMP
CLK1
TPBIN
TPGIN
TPRIN
RV401
RV402
CV401
IC420
IC421
IC431
IC439
IC440
IC442
IC445
IC446
IC447
IC448
IC449
IC451
IC452
IC453
IC454
IC455
IC456
IC457
IC458
IC459
FL401
FL410
FL430
FL450
L401
L402
E3
E4
E5
E6
A
B
C
D
E
F
G
1
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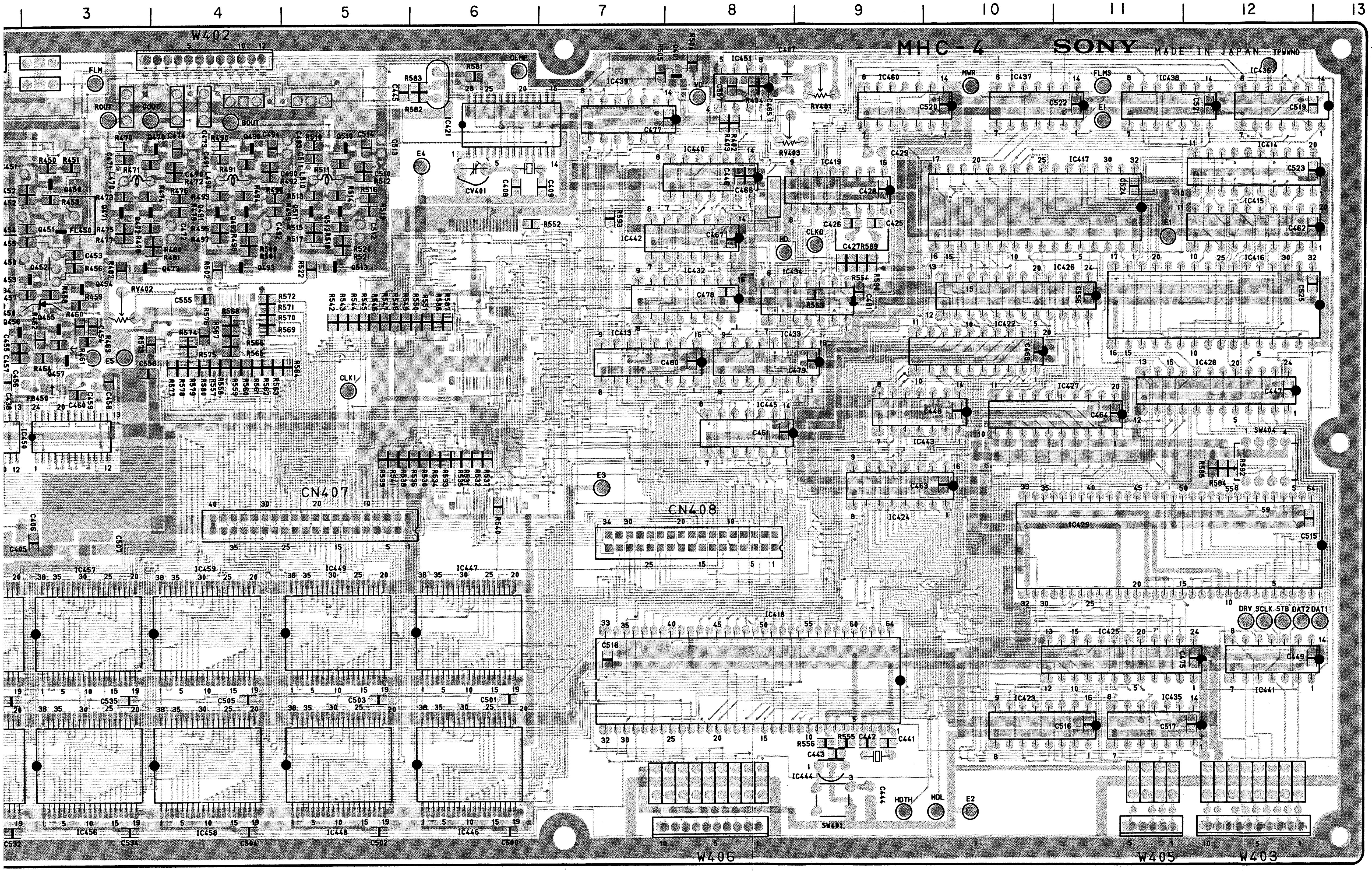
8

MHC-4 —COMPONENT SIDE—
1-634-708-12
UP-3000P


3
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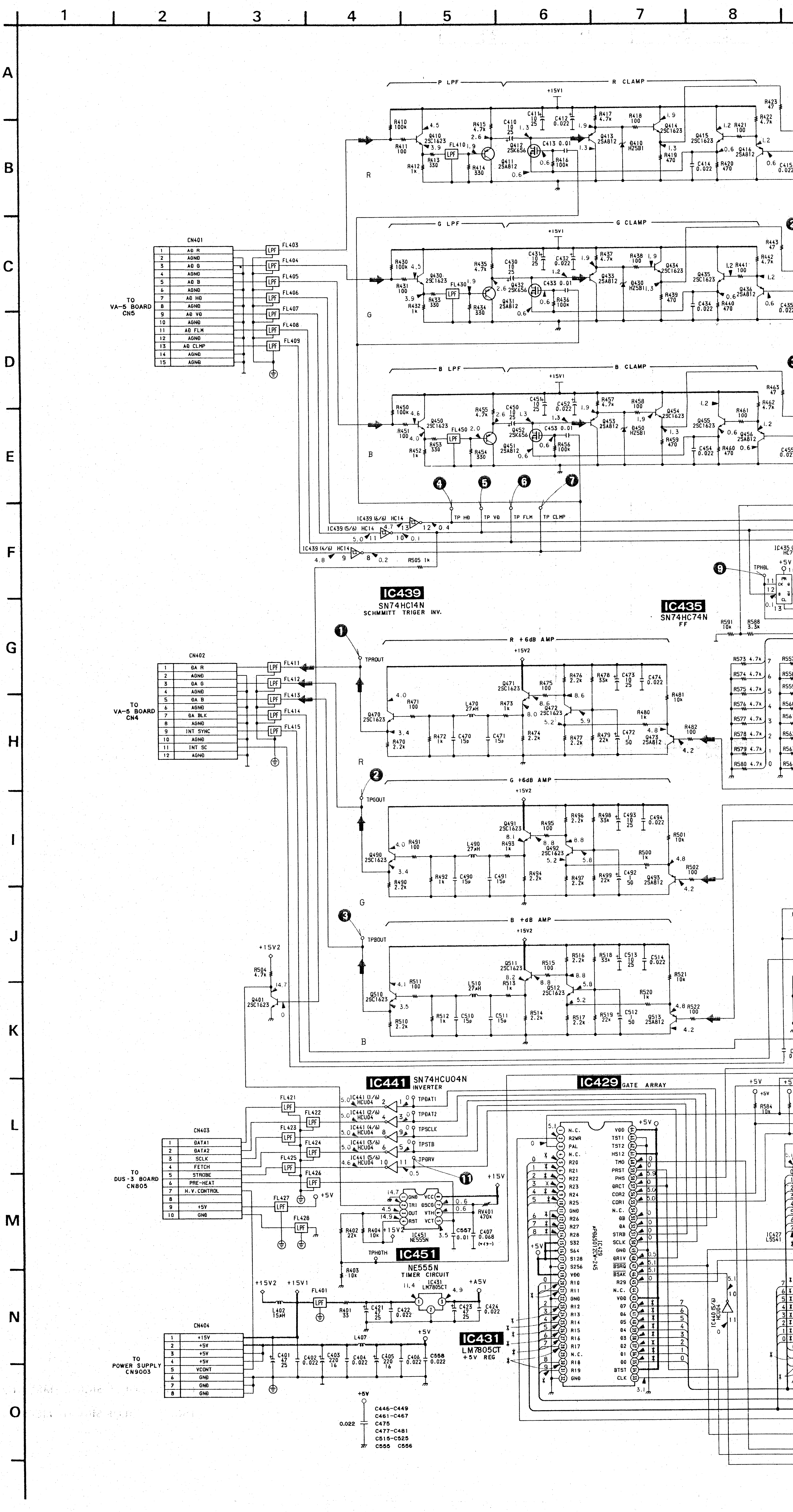
13
W402
MHC-4
SONY
MADE IN JAPAN
CN407
CN408
IC418
IC429
IC417
W406
W405
W403

MHC-4 –SOLDERING SIDE–
1-634-708-12
UP-3000P

▨ : Conductor side pattern
▨ : Cmponent side pattern

MHC-4 (1/2) (VIDEO PROCESS (ANALOG))


1
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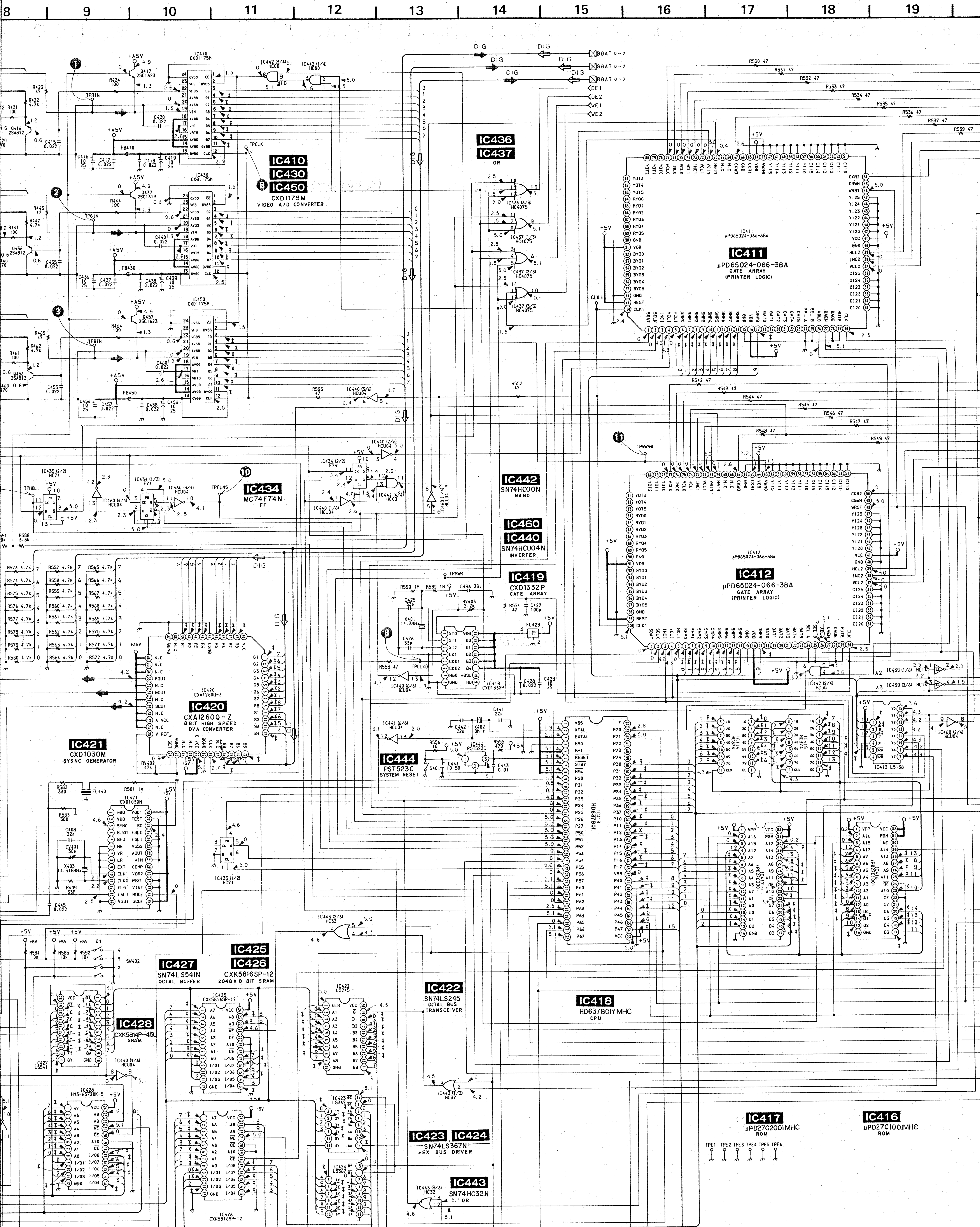
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P LPF
R CLAMP
G LPF
G CLAMP
B LPF
B CLAMP
+15V1
CN401
TO VA-5 BOARD CN5
AO R
AGND
AO G
AO B
AO HD
AO VD
AO FLM
AO CLMP
TP HD
TP VD
TP FLM
TP CLMP
IC439
SN74HC14N
SCHMMITT TRIGER INV.
IC435
SN74HC74N
FF
R +6dB AMP
G +6dB AMP
B +dB AMP
+15V2
TPROUT
TPGOUT
TPBOUT
CN402
TO VA-5 BOARD CN4
OA R
OA G
OA B
OA BLK
INT SYNC
INT SC
IC441
SN74HCU04N
INVERTER
IC429
GATE ARRAY
CN403
TO DUS-3 BOARD CN805
DATA1
DATA2
SCLK
FETCH
STROBE
PRE-HEAT
H.V.CONTROL
+5V
GND
TPDAT1
TPDAT2
TPSCLK
TPSTB
TPDRV
IC451
NE555N
TIMER CIRCUIT
TPHOTH
IC431
LM7805CT
+5V REG
+A5V
CN404
TO POWER SUPPLY CN9003
+15V
VCONT
C446–C449
C461–C467
C475
C477–C481
C515–C525
C555 C556
0.022

MHC-4 Board

CN407	D-5	
CN408	E-8	
CV401	B-6	
D410	C-1	
D430	C-2	
D450	C-3	
FL401	D-1	
FL403	A-1	
FL404	A-1	
FL405	A-1	
FL406	A-2	
FL407	A-2	
FL408	A-3	
FL409	A-3	
FL410	B-1	
FL411	A-3	
FL412	A-4	
FL413	A-4	
FL414	A-4	
FL415	A-5	
FL417	F-11	
FL418	F-11	
FL419	F-11	
FL420	F-11	
FL421	F-12	
FL422	F-12	
FL423	F-12	
FL424	F-12	
FL425	F-12	
FL426	F-12	
FL427	F-12	
FL428	F-12	
FL429	B-8	
FL430	B-2	
FL431	F-8	
FL432	F-8	
FL433	F-8	
FL434	F-8	
FL435	F-8	
FL436	F-8	
FL437	F-8	
FL438	F-8	
FL439	F-7	
FL440	A-6	
FL450	B-3	
IC410	D-1	S
IC411	D-6	
IC412	B-6	
IC413	C-7	
IC414	B-12	
IC415	B-12	
IC416	C-12	
IC417	B-10	
IC418	F-9	
IC419	B-9	
IC420	C-4	
IC421	A-6	S
IC422	C-10	
IC423	F-10	
IC424	D-9	
IC425	E-11	
IC426	C-10	
IC427	D-11	
IC428	C-12	
IC429	E-12	
IC430	D-2	S
IC431	D-1	
IC432	C-8	
IC433	C-8	
IC434	C-9	
IC435	F-11	
IC436	A-12	
IC437	A-10	
IC438	A-11	
IC439	A-7	
IC440	B-8	
IC441	E-12	
IC442	B-8	
IC443	D-9	
IC444	F-9	
IC445	D-8	
IC446	F-6	S
IC447	E-6	S
IC448	F-5	S
IC449	E-5	S
IC450	D-3	S
IC451	A-8	
IC452	F-1	S
IC453	E-1	S
IC454	F-2	S
IC455	E-2	S
IC456	F-3	S
IC457	E-3	S
IC458	F-4	S
IC459	E-4	S
IC460	A-9	
Q410	B-1	S
Q411	B-1	S
Q412	B-1	S
Q413	B-1	S
Q414	C-1	S
Q415	C-1	S
Q416	C-1	S
Q417	C-1	S
Q430	B-2	S
Q431	B-2	S
Q432	B-2	S
Q433	B-2	S
Q434	C-2	S
Q435	C-2	S
Q436	C-2	S
Q437	C-2	S
Q450	B-3	S
Q451	B-3	S
Q452	B-3	S
Q453	B-3	S
Q454	C-3	S
Q455	C-3	S
Q456	C-2	S
Q457	C-3	S
Q470	A-4	S
Q471	B-3	S
Q472	B-3	S
Q473	B-3	S
Q490	A-4	S
Q491	B-4	S
Q492	B-4	S
Q493	B-4	S
Q510	A-5	S
Q511	B-5	S
Q512	B-5	S
Q513	B-5	S
RV401	A-9	
RV402	C-3	
RV403	A-8	
SW401	G-9	
SW402	D-12	
X401	B-9	
X402	F-9	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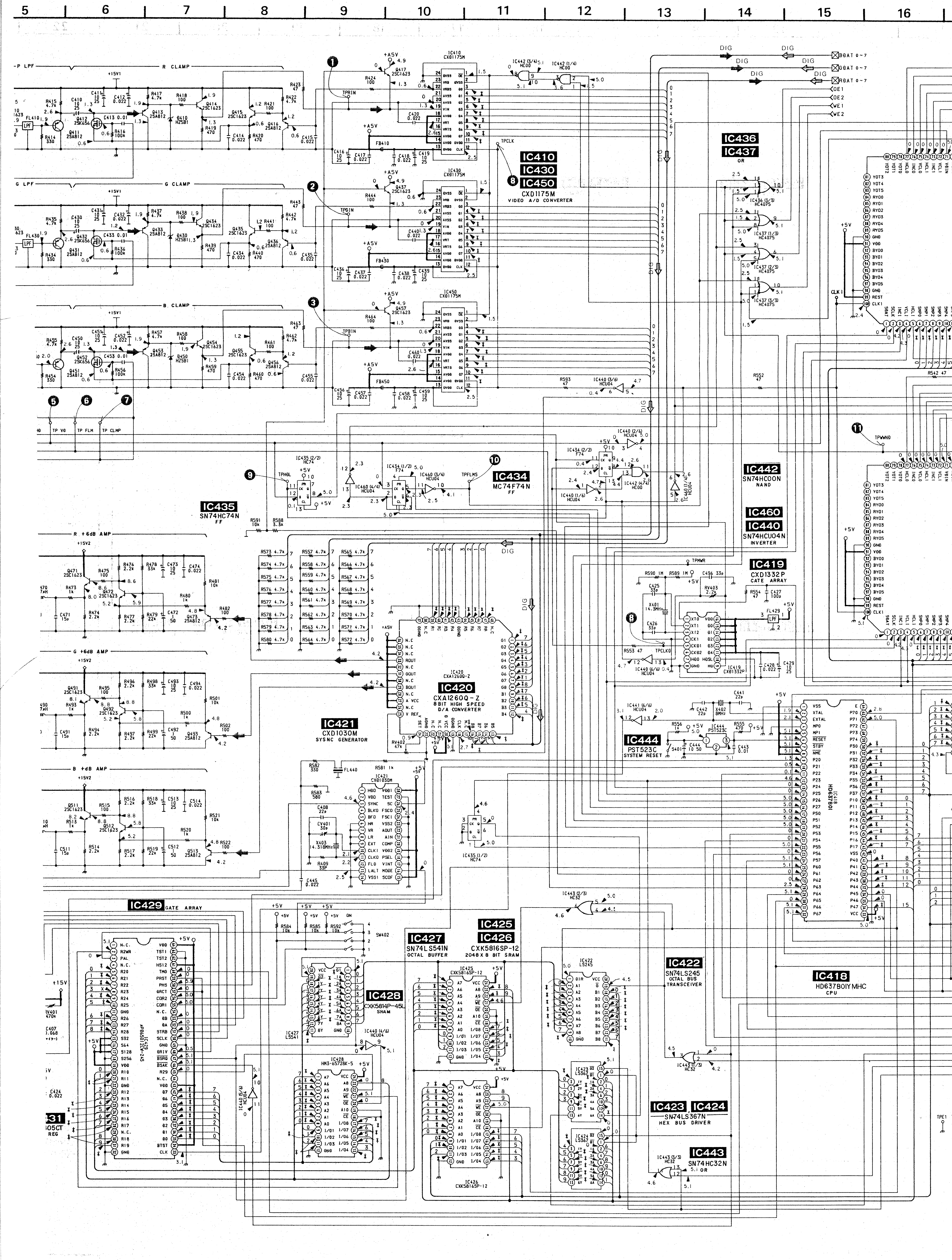
IC410
IC430
IC450
CXD1175M
VIDEO A/D CONVERTER
IC436
IC437
OR
IC411
μPD65024-066-3BA
GATE ARRAY
(PRINTER LOGIC)
IC412
μPD65024-066-3BA
GATE ARRAY
(PRINTER LOGIC)
IC434
MC74F74N
FF
IC442
SN74HC00N
NAND
IC460
IC440
SN74HCU04N
INVERTER
IC419
CXD1332P
GATE ARRAY
IC420
CXA1260Q-Z
8BIT HIGH SPEED
D/A CONVERTER
IC421
CXD1030M
SYSNC GENERATOR
IC444
PST523C
SYSTEM RESET
IC418
HD637B01Y MHC
CPU
IC425
IC426
CXK5816SP-12
2048 X 8 BIT SRAM
IC427
SN74LS541N
OCTAL BUFFER
IC428
CXK5814P-45L
SRAM
IC422
SN74LS245
OCTAL BUS
TRANSCEIVER
IC423
IC424
SN74LS367N
HEX BUS DRIVER
IC443
SN74HC32N
OR
IC417
μPD27C2001MHC
ROM
IC416
μPD27C1001MHC
ROM
IC413 LS138
TPE1 TPE2 TPE3 TPE4 TPE5 TPE6
BDAT 0~7
OE1
OE2
WE1
WE2
DIG
TPRIN
TPGIN
TPBIN
TPCLK
TPHBL
TPFLMS
TPWWND
TPMWR
TPCLKO
SW402
S401
X401 14.3MHz
X402 8MHz
X403 14.318MHz
FL429
LPF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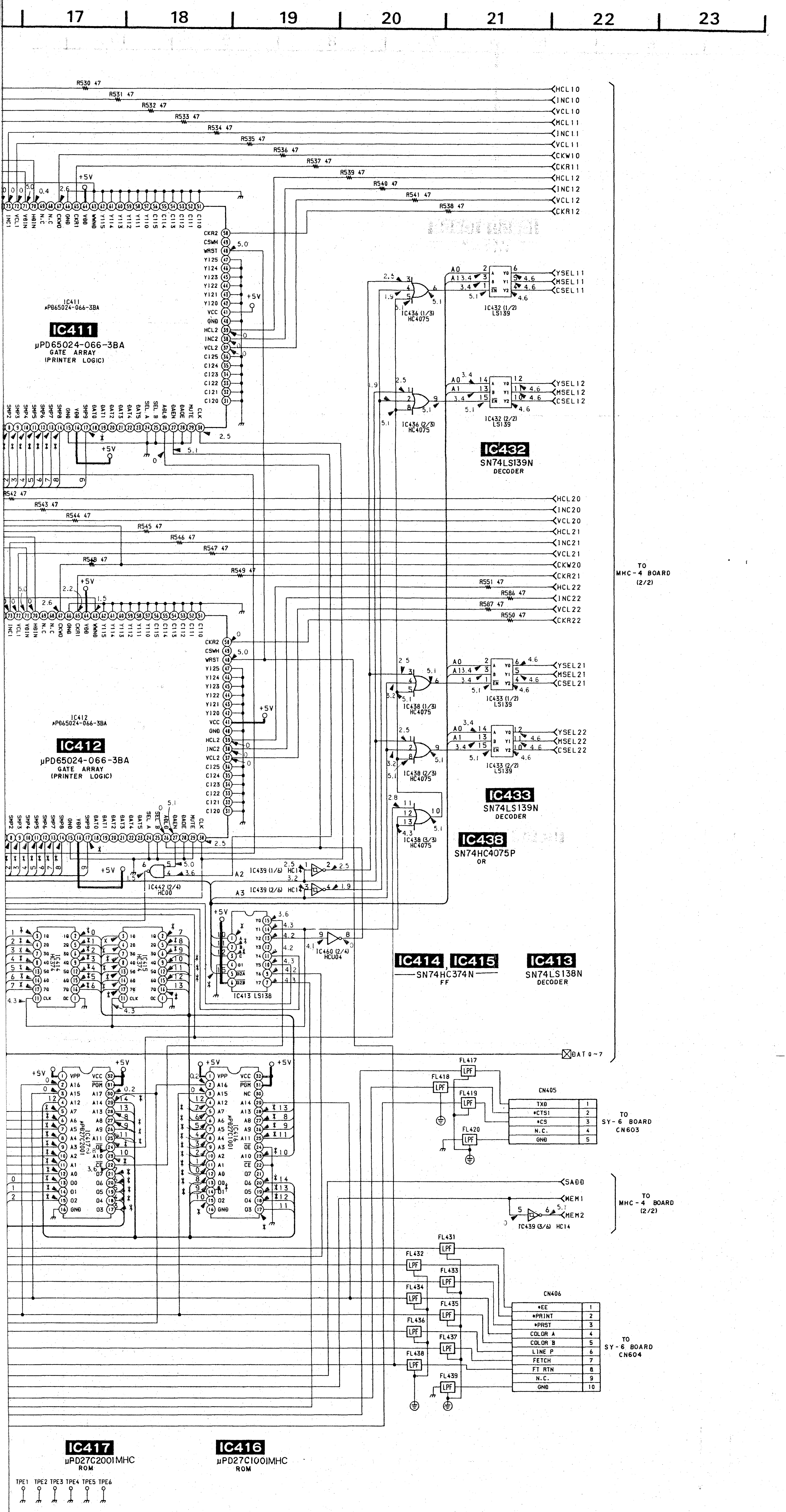
15
16
R CLAMP
G CLAMP
B CLAMP
R +6dB AMP
G +6dB AMP
B +6dB AMP
IC410
IC430
IC450
CXD1175M
VIDEO A/D CONVERTER
IC436
IC437
OR
IC434
MC74F74N
FF
IC435
SN74HC74N
FF
IC442
SN74HC00N
NAND
IC460
IC440
SN74HCU04N
INVERTER
IC419
CXD1332P
GATE ARRAY
IC420
CXA1260Q-Z
8BIT HIGH SPEED
D/A CONVERTER
IC421
CXD1030M
SYSNC GENERATOR
IC444
PST523C
SYSTEM RESET
IC429 GATE ARRAY
IC427
SN74LS541N
OCTAL BUFFER
IC425
IC426
CXK5816SP-12
2048 X 8 BIT SRAM
IC428
CXK5814P-45L
SRAM
IC422
SN74LS245
OCTAL BUS TRANSCEIVER
IC423
IC424
SN74LS367N
HEX BUS DRIVER
IC443
SN74HC32N
OR
IC418
HD637B01Y MHC
CPU
BDAT 0~7
GDAT 0~7
RDAT 0~7
DE1
DE2
WE1
WE2
DIG
TPRIN
TPGIN
TPBIN
TPCLK
TPHOL
TPFLMS
TPWWND
TPMWR
TPCLKO
TP VD
TP FLM
TP CLMP
SW402


17
18
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20
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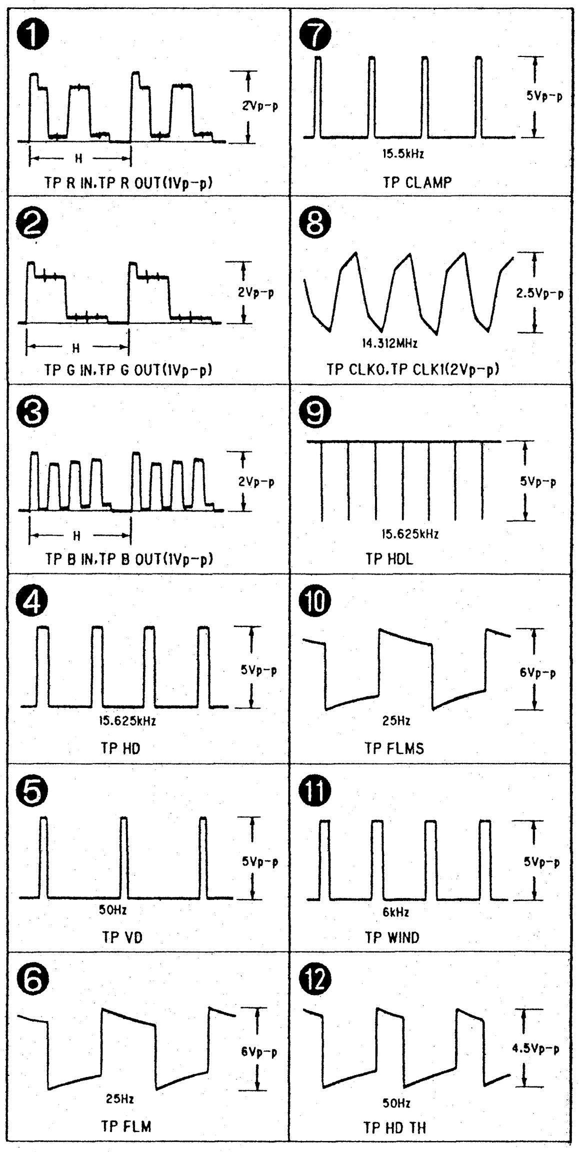
22
23
IC411
μPD65024-066-3BA
GATE ARRAY
(PRINTER LOGIC)
IC412
μPD65024-066-3BA
GATE ARRAY
(PRINTER LOGIC)
IC432
SN74LS139N
DECODER
IC433
SN74LS139N
DECODER
IC438
SN74HC4075P
OR
IC414 IC415
SN74HC374N
FF
IC413
SN74LS138N
DECODER
IC417
μPD27C2001MHC
ROM
IC416
μPD27C1001MHC
ROM
IC436 (1/3) HC4075
IC436 (2/3) HC4075
IC432 (1/2) LS139
IC432 (2/2) LS139
IC433 (1/2) LS139
IC433 (2/2) LS139
IC438 (1/3) HC4075
IC438 (2/3) HC4075
IC438 (3/3) HC4075
IC439 (1/6) HC14
IC439 (2/6) HC14
IC439 (3/6) HC14
IC442 (2/4) HC00
IC460 (2/4) HCU04
IC413 LS138
HCL10
INC10
VCL10
MCL11
INC11
VCL11
CKW10
CKR11
HCL12
INC12
VCL12
CKR12
YSEL11
MSEL11
CSEL11
YSEL12
MSEL12
CSEL12
HCL20
INC20
VCL20
HCL21
INC21
VCL21
CKW20
CKR21
HCL22
INC22
VCL22
CKR22
YSEL21
MSEL21
CSEL21
YSEL22
MSEL22
CSEL22
TO MHC-4 BOARD (2/2)
DAT0-7
CN405
TXD
*CTS1
*CS
N.C.
GND
TO SY-6 BOARD CN603
SA00
MEM1
MEM2
TO MHC-4 BOARD (2/2)
CN406
*EE
*PRINT
*PRST
COLOR A
COLOR B
LINE P
FETCH
FT RTN
N.C.
GND
TO SY-6 BOARD CN604
FL417
FL418
FL419
FL420
FL431
FL432
FL433
FL434
FL435
FL436
FL437
FL438
FL439
LPF
+5V
TPE1 TPE2 TPE3 TPE4 TPE5 TPE6

MHC-4 Board

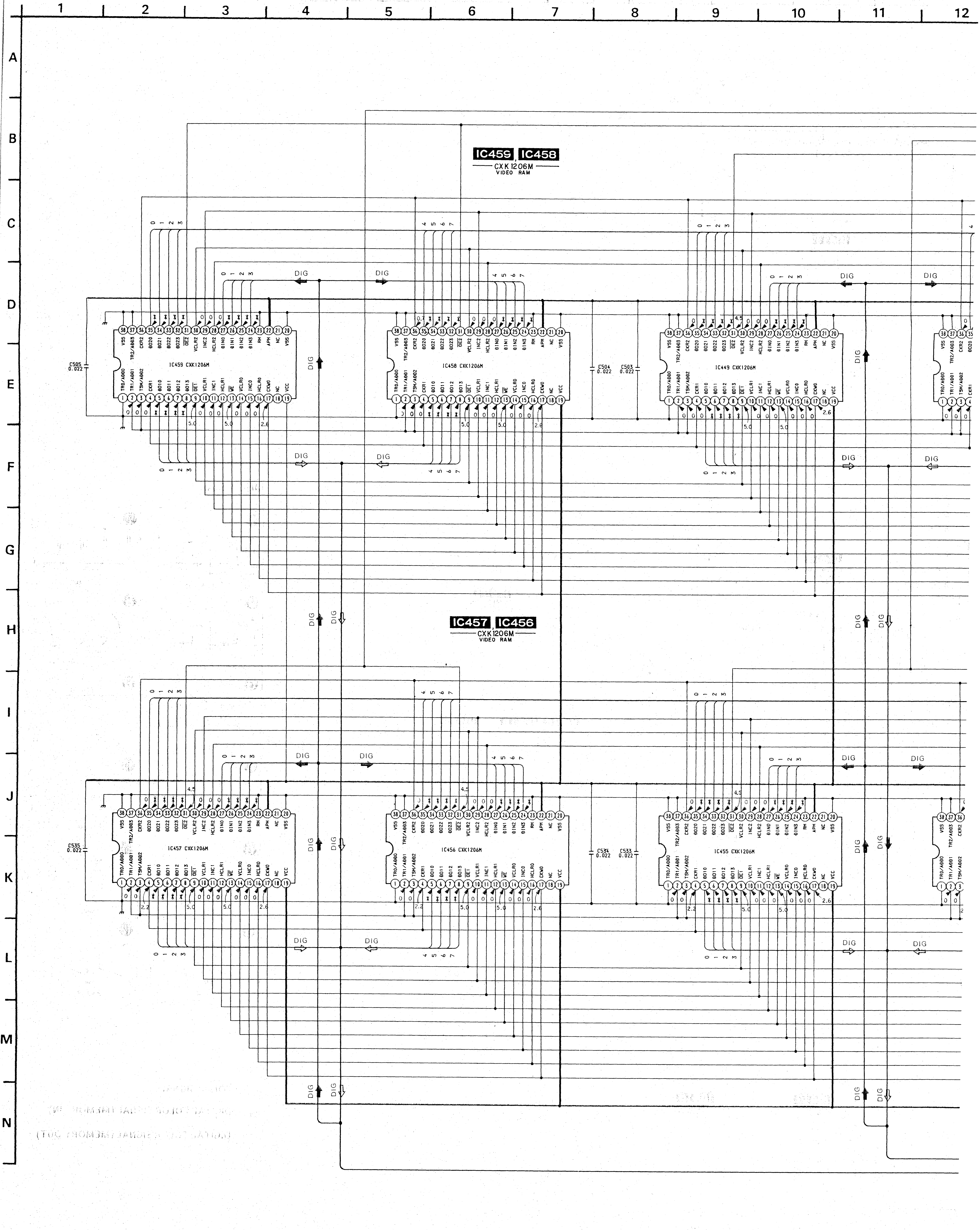


➡ : COLOR SIGNAL

DIG ➡ : DIGITAL COLOR SIGNAL (MEMORY IN)

DIG ⇨ : DIGITAL COLOR SIGNAL (MEMORY OUT)

MHC-4 (2/2) (VIDEO PROCESS (DIGITAL))



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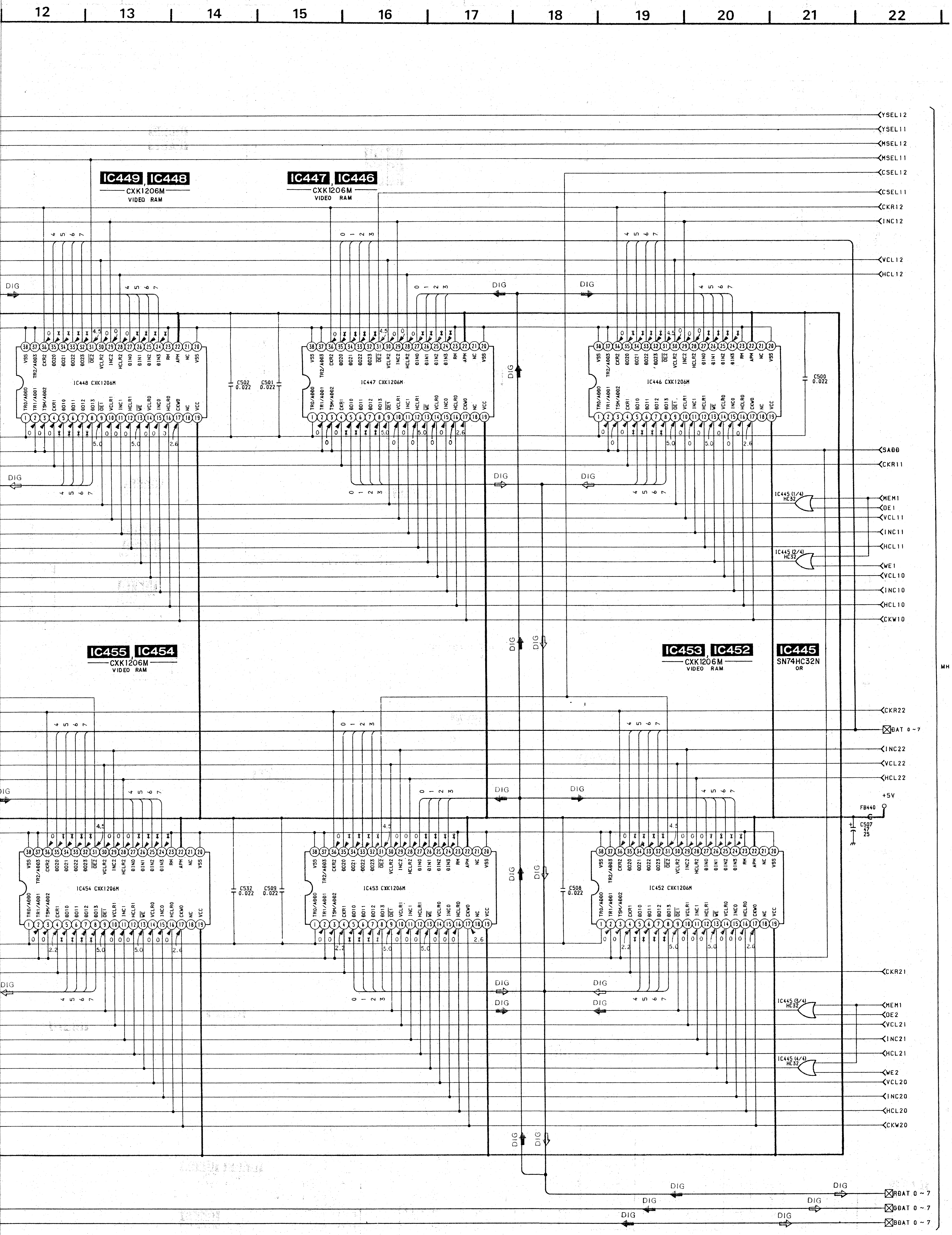
12
A
B
C
D
E
F
G
H
I
J
K
L
M
N
IC459 IC458
CXK1206M
VIDEO RAM
IC459 CXK1206M
IC458 CXK1206M
IC449 CXK1206M
IC457 IC456
CXK1206M
VIDEO RAM
IC457 CXK1206M
IC456 CXK1206M
IC455 CXK1206M
C505 0.022
C504 0.022
C503 0.022
C535 0.022
C534 0.022
C533 0.022
DIG
VSS
TR2/A003
CKR2
0020
0021
0022
0023
OE2
VCLR2
INC2
HCLR2
0IN0
0IN1
0IN2
0IN3
RH
APH
NC
TR0/A000
TR1/A001
TSM/A002
CKR1
0010
0011
0012
0013
OE1
VCLR1
INC1
HCLR1
WE
VCLR0
INC0
HCLR0
CKW0
VCC
5.0
2.6
2.2
4.5
0.7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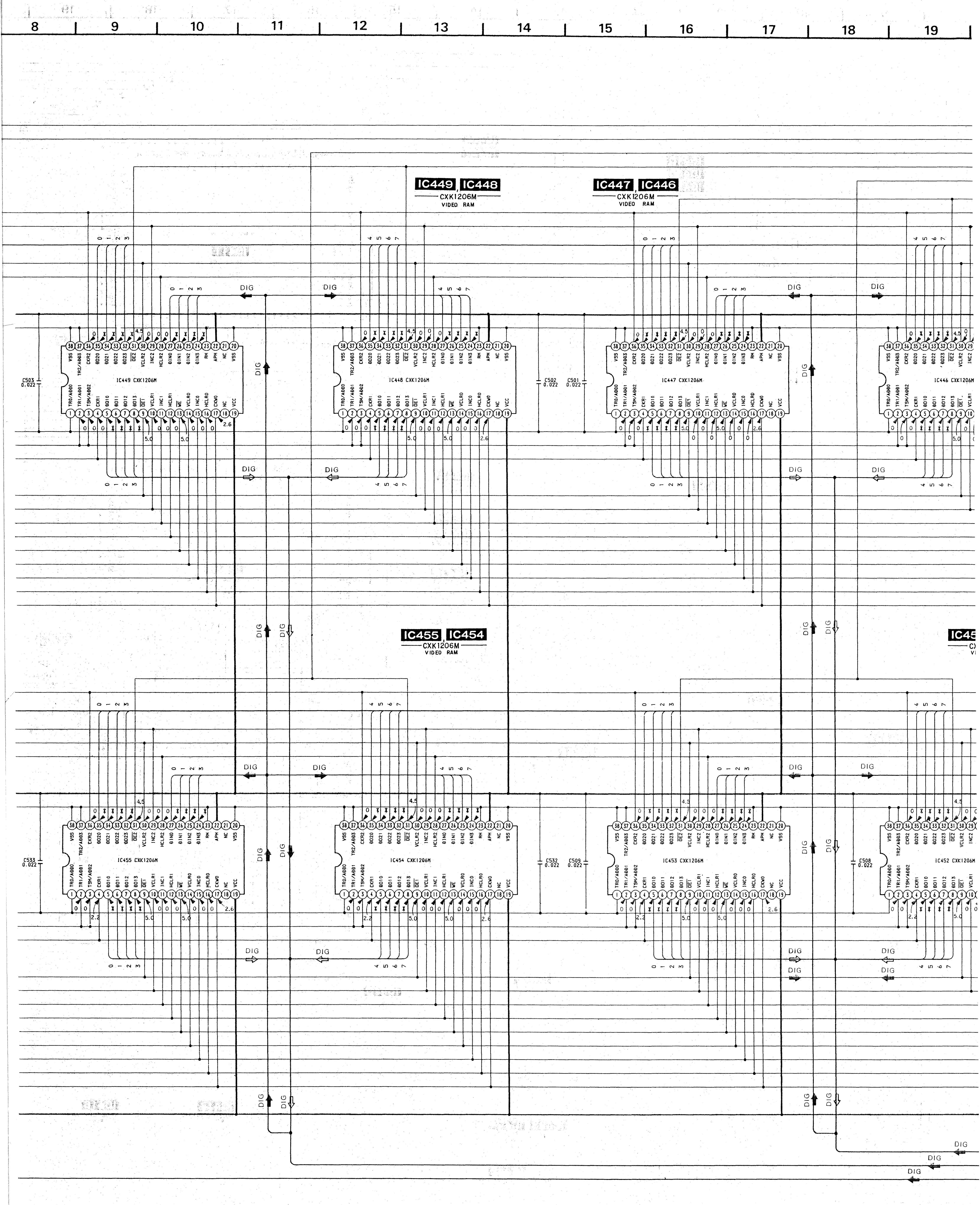
22
IC449, IC448
CXK1206M
VIDEO RAM
IC447, IC446
CXK1206M
VIDEO RAM
IC448 CXK1206M
IC447 CXK1206M
IC446 CXK1206M
C502 0.022
C501 0.022
C500 0.022
IC455, IC454
CXK1206M
VIDEO RAM
IC453, IC452
CXK1206M
VIDEO RAM
IC445
SN74HC32N
OR
IC454 CXK1206M
IC453 CXK1206M
IC452 CXK1206M
C532 0.022
C509 0.022
C508 0.022
IC445 (1/4) HC32
IC445 (2/4) HC32
IC445 (3/4) HC32
IC445 (4/4) HC32
FB440
C507 47 25
+5V
DIG
YSEL12
YSEL11
MSEL12
MSEL11
CSEL12
CSEL11
CKR12
INC12
VCL12
HCL12
SA00
CKR11
MEM1
OE1
VCL11
INC11
HCL11
WE1
VCL10
INC10
HCL10
CKW10
MH
CKR22
BDAT 0 ~ 7
INC22
VCL22
HCL22
CKR21
MEM1
OE2
VCL21
INC21
HCL21
WE2
VCL20
INC20
HCL20
CKW20
RDAT 0 ~ 7
GDAT 0 ~ 7
BDAT 0 ~ 7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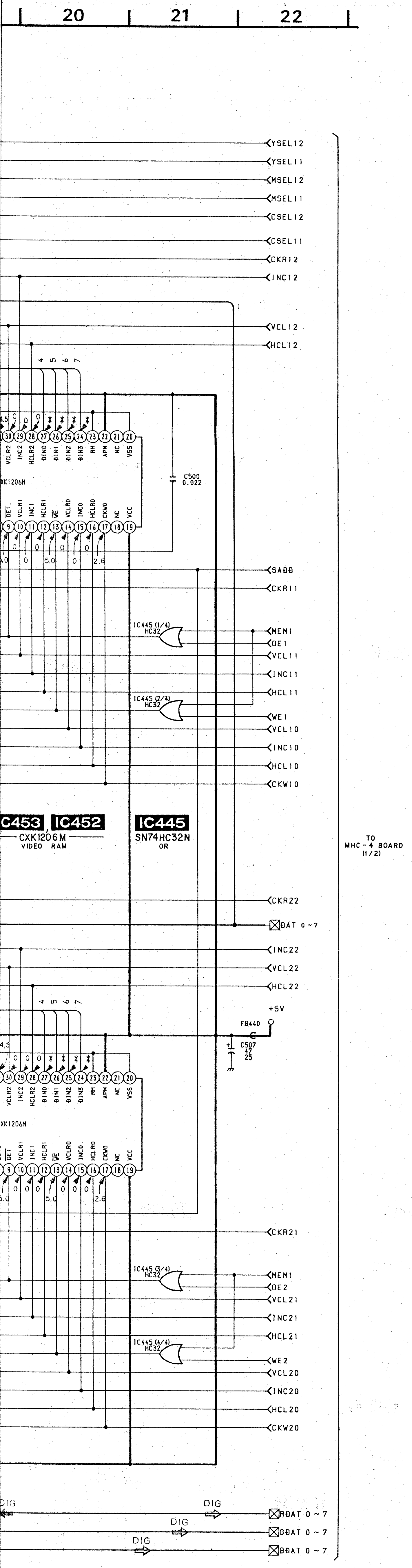
IC449, IC448
CXK1206M
VIDEO RAM
IC447, IC446
CXK1206M
VIDEO RAM
IC455, IC454
CXK1206M
VIDEO RAM
IC449 CXK1206M
IC448 CXK1206M
IC447 CXK1206M
IC446 CXK1206M
IC455 CXK1206M
IC454 CXK1206M
IC453 CXK1206M
IC452 CXK1206M
C503 0.022
C502 0.022
C501 0.022
C533 0.022
C532 0.022
C509 0.022
C508 0.022
DIG
VSS
TR2/A0D3
CKR2
0D20
0D21
0D22
0D23
OE2
VCLR2
INC2
HCLR2
0IN0
0IN1
0IN2
0IN3
RH
APH
NC
TR0/A0D0
TR1/A0D1
TSH/A0D2
CKR1
0D10
0D11
0D12
0D13
OE1
VCLR1
INC1
HCLR1
WE
VCLR0
INC0
HCLR0
CKW0
VCC
4.5
2.6
2.2
5.0

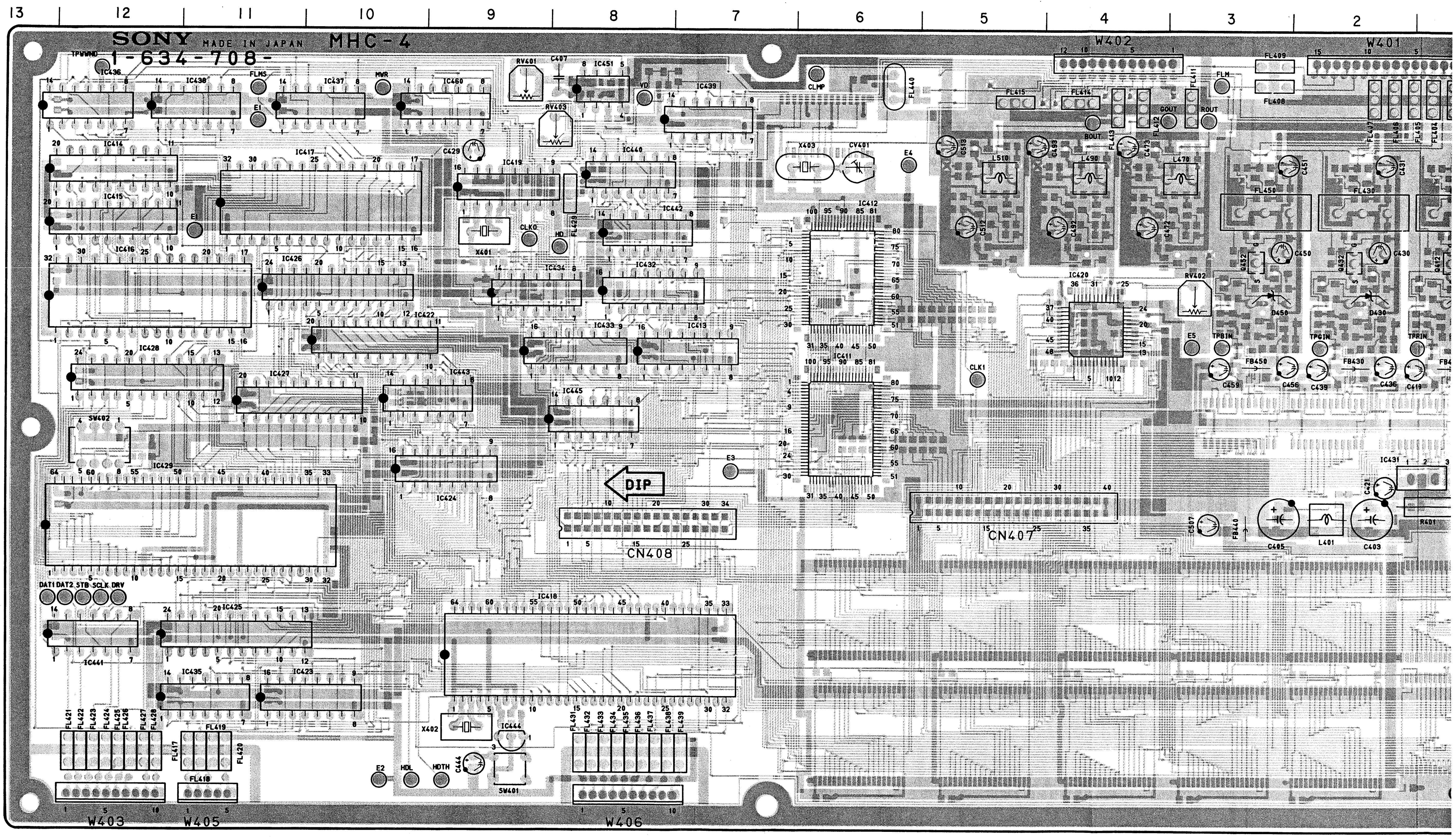

20
21
22
YSEL12
YSEL11
MSEL12
MSEL11
CSEL12
CSEL11
CKR12
INC12
VCL12
HCL12
CXK1206M
C500 0.022
SADD
CKR11
IC445 (1/4) HC32
MEM1
OE1
VCL11
INC11
HCL11
IC445 (2/4) HC32
WE1
VCL10
INC10
HCL10
CKW10
IC453
IC452
CXK1206M VIDEO RAM
IC445
SN74HC32N OR
TO MHC-4 BOARD (1/2)
CKR22
DAT 0 ~ 7
INC22
VCL22
HCL22
+5V
FB440
C507 47 25
CKR21
IC445 (3/4) HC32
MEM1
OE2
VCL21
INC21
HCL21
IC445 (4/4) HC32
WE2
VCL20
INC20
HCL20
CKW20
DIG
RDAT 0 ~ 7
GDAT 0 ~ 7
BDAT 0 ~ 7

DIG ➡ : DIGITAL COLOR SIGNAL (MEMORY IN)

DIG ⇨ : DIGITAL COLOR SIGNAL (MEMORY OUT)

MHC-4 Board

CN407	D-5	
CN408	E-8	
CV401	B-6	
D410	C-1	
D430	C-2	
D450	C-3	
FL401	D-1	
FL403	A-1	
FL404	A-1	
FL405	A-1	
FL406	A-2	
FL407	A-2	
FL408	A-3	
FL409	A-3	
FL410	B-1	
FL411	A-3	
FL412	A-4	
FL413	A-4	
FL414	A-4	
FL415	A-5	
FL417	F-11	
FL418	F-11	
FL419	F-11	
FL420	F-11	
FL421	F-12	
FL422	F-12	
FL423	F-12	
FL424	F-12	
FL425	F-12	
FL426	F-12	
FL427	F-12	
FL428	F-12	
FL429	B-8	
FL430	B-2	
FL431	F-8	
FL432	F-8	
FL433	F-8	
FL434	F-8	
FL435	F-8	
FL436	F-8	
FL437	F-8	
FL438	F-8	
FL439	F-7	
FL440	A-6	
FL450	B-3	
IC410	D-1	S
IC411	D-6	
IC412	B-6	
IC413	C-7	
IC414	B-12	
IC415	B-12	
IC416	C-12	
IC417	B-10	
IC418	F-9	
IC419	B-9	
IC420	C-4	
IC421	A-6	S
IC422	C-10	
IC423	F-10	
IC424	D-9	
IC425	E-11	
IC426	C-10	
IC427	D-11	
IC428	C-12	
IC429	E-12	
IC430	D-2	S
IC431	D-1	
IC432	C-8	
IC433	C-8	
IC434	C-9	
IC435	F-11	
IC436	A-12	
IC437	A-10	
IC438	A-11	
IC439	A-7	
IC440	B-8	
IC441	E-12	
IC442	B-8	
IC443	D-9	
IC444	F-9	
IC445	D-8	
IC446	F-6	S
IC447	E-6	S
IC448	F-5	S
IC449	E-5	S
IC450	D-3	S
IC451	A-8	
IC452	F-1	S
IC453	E-1	S
IC454	F-2	S
IC455	E-2	S
IC456	F-3	S
IC457	E-3	S
IC458	F-4	S
IC459	E-4	S
IC460	A-9	
Q410	B-1	S
Q411	B-1	S
Q412	B-1	S
Q413	B-1	S
Q414	C-1	S
Q415	C-1	S
Q416	C-1	S
Q417	C-1	S
Q430	B-2	S
Q431	B-2	S
Q432	B-2	S
Q433	B-2	S
Q434	C-2	S
Q435	C-2	S
Q436	C-2	S
Q437	C-2	S
Q450	B-3	S
Q451	B-3	S
Q452	B-3	S
Q453	B-3	S
Q454	C-3	S
Q455	C-3	S
Q456	C-2	S
Q457	C-3	S
Q470	A-4	S
Q471	B-3	S
Q472	B-3	S
Q473	B-3	S
Q490	A-4	S
Q491	B-4	S
Q492	B-4	S
Q493	B-4	S
Q510	A-5	S
Q511	B-5	S
Q512	B-5	S
Q513	B-5	S
RV401	A-9	
RV402	C-3	
RV403	A-8	
SW401	G-9	
SW402	D-12	
X401	B-9	
X402	F-9	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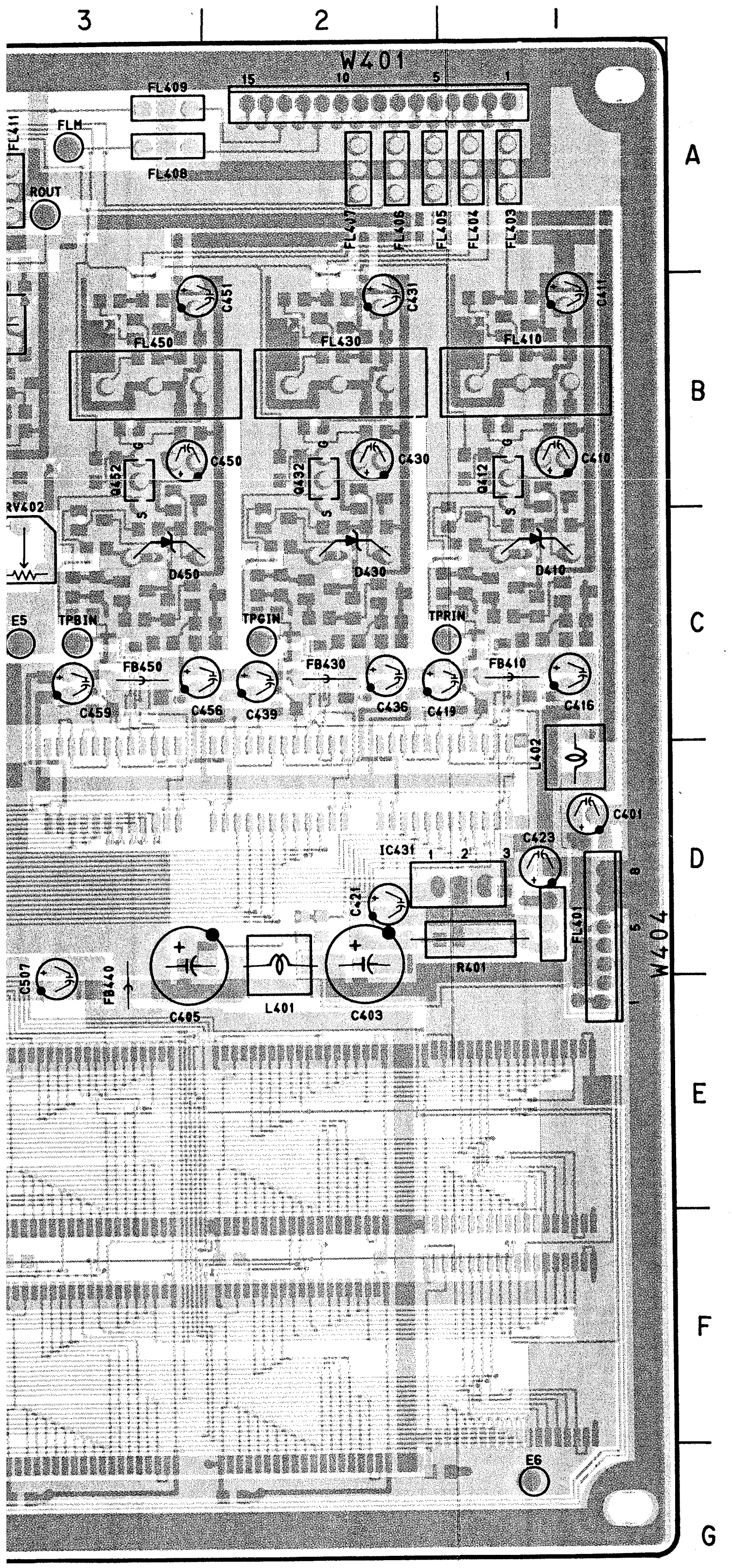
2
SONY MADE IN JAPAN MHC-4
1-634-708-
TPWWND
IC436
IC438
FLMS
IC437
MWR
IC460
RV401
C407
IC451
VD
IC439
CLMP
FL440
W402
FL415
FL414
FL413
FL412
FL411
GOUT
ROUT
BOUT
FLM
FL409
FL408
W401
FL407
FL406
FL405
FL404
E1
RV403
IC414
IC415
IC417
C429
IC419
IC440
X403
CV401
E4
Q510
L510
Q490
L490
C473
L470
C451
C431
FL450
FL430
IC416
IC426
X401
CLKO
HD
FL429
IC442
IC412
Q512
Q492
Q472
Q452
C450
Q432
C430
IC434
IC432
IC422
IC420
RV402
D450
D430
IC428
IC433
IC413
E5
TPBIN
TPGIN
TPRIN
IC427
IC443
IC411
CLK1
FB450
FB430
C459
C456
C439
C436
C419
SW402
IC445
IC429
IC424
E3
DIP
CN408
CN407
IC431
C421
Q567
FB440
C405
L401
C403
R401
DAT1
DAT2
STB
SCLK
DRV
IC425
IC418
IC441
IC435
IC423
X402
IC444
FL421
FL422
FL423
FL424
FL425
FL426
FL427
FL428
FL417
FL419
FL420
FL418
E2
HDL
HDTH
C444
SW401
FL431
FL432
FL433
FL434
FL435
FL436
FL437
FL438
FL439
W403
W405
W406

MHC-4 —COM
1-634-708-12
UP-3000P


3
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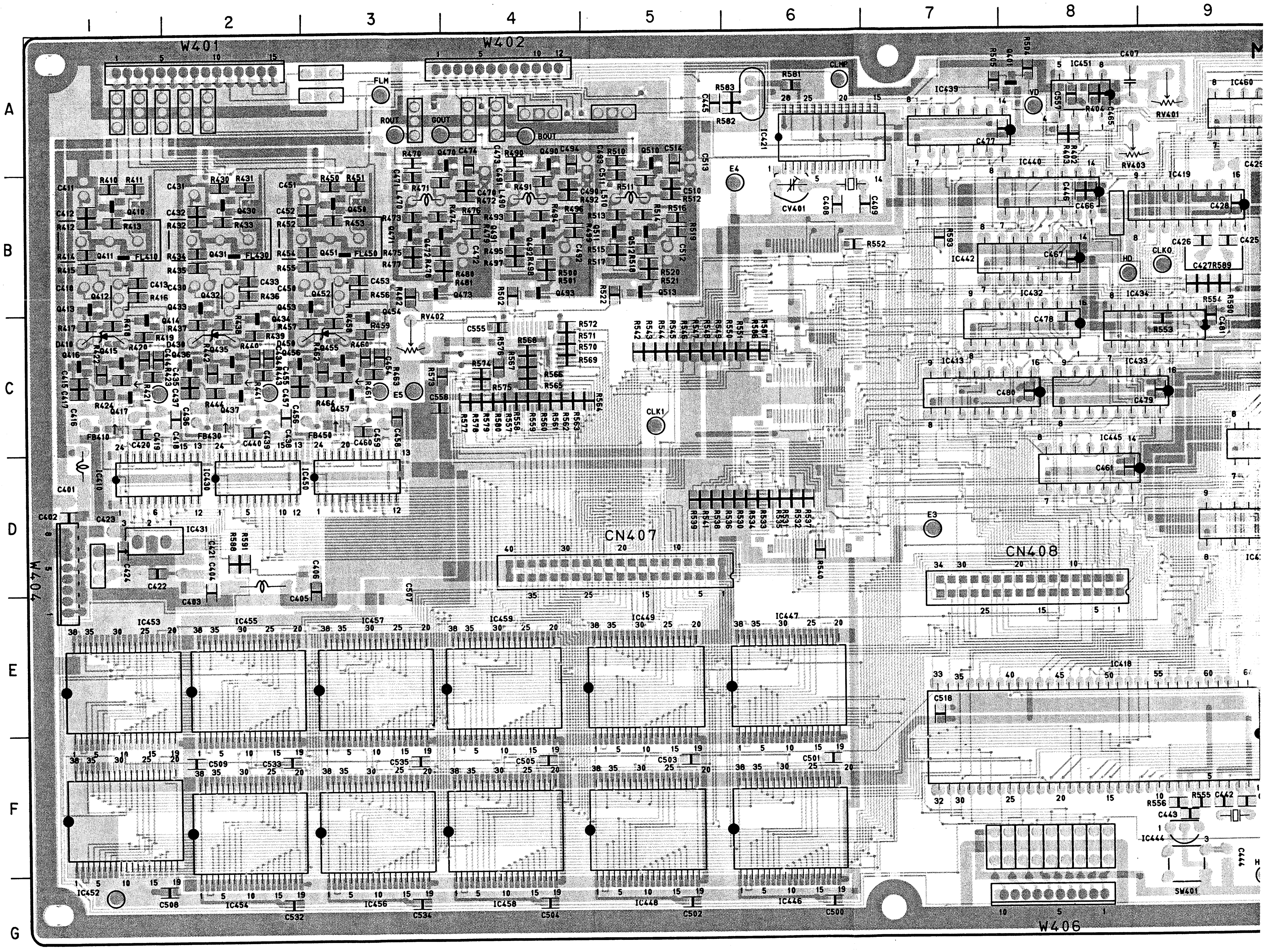
A
B
C
D
E
F
G
W401
FLM
ROUT
FL409
FL408
FL417
FL406
FL405
FL404
FL403
FL450
FL430
FL410
C451
C431
C411
C450
C430
C410
D450
D430
D410
RV402
E5
TPBIN
TPGIN
TPRIN
FB450
FB430
FB410
C459
C456
C439
C436
C419
C416
L402
C401
C423
IC431
C421
FL401
R401
C405
L401
C403
C507
FB440
W404
E6

MHC-4 –COMPONENT SIDE–
1-634-708-12
UP-3000P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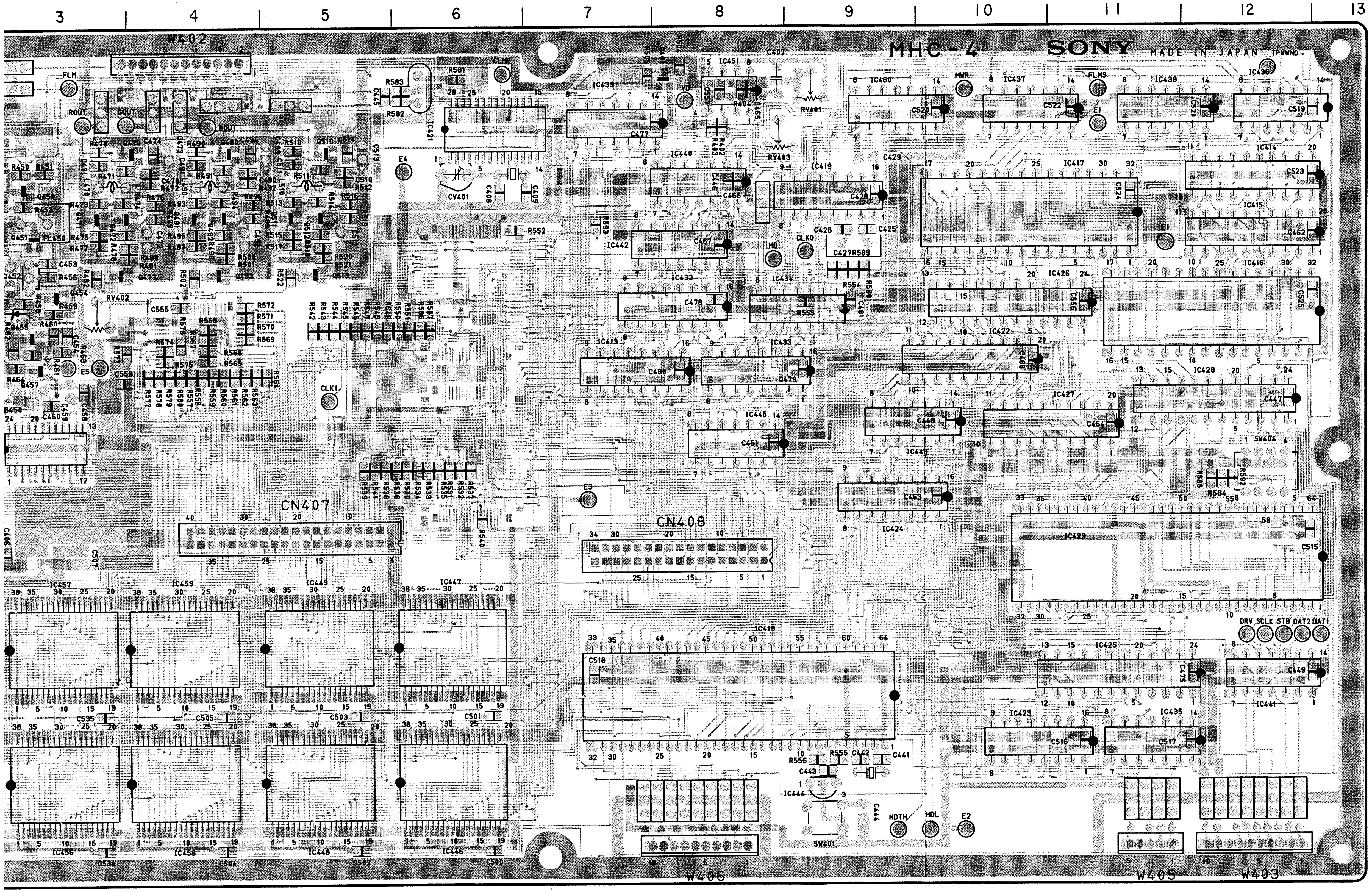
A
B
C
D
E
F
G
W401
W402
FLM
ROUT
GOUT
BOUT
CLMP
VD
HD
CLKO
CLK1
E3
E4
E5
C407
IC451
IC439
IC460
IC421
RV401
RV403
CV401
IC440
IC419
IC442
IC432
IC434
IC413
IC433
IC445
R583
R582
R581
R552
RV402
FB410
FB430
FB450
IC410
IC430
IC450
IC431
W404
CN407
CN408
IC453
IC455
IC457
IC459
IC449
IC447
IC418
IC452
IC454
IC456
IC458
IC448
IC446
IC444
SW401
W406
C518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13
MHC-4
SONY
MADE IN JAPAN
W402
W403
W405
W406
CN407
CN408
IC418
IC429
IC417
IC426
IC422
IC425
IC447
IC449
IC457
IC459
IC456
IC458
IC448
IC446
SW401
SW404
RV401
RV402
RV403
CV401
FLM
ROUT
GOUT
BOUT
CLMP
VD
HD
CLKO
CLK1
MWR
FLMS
E1
E2
E3
E4
E5
HDTH
HDL
DRV
SCLK
STB
DAT2
DAT1

MHC-4 —SOLDERING SIDE—
1-634-708-12
UP-3000P

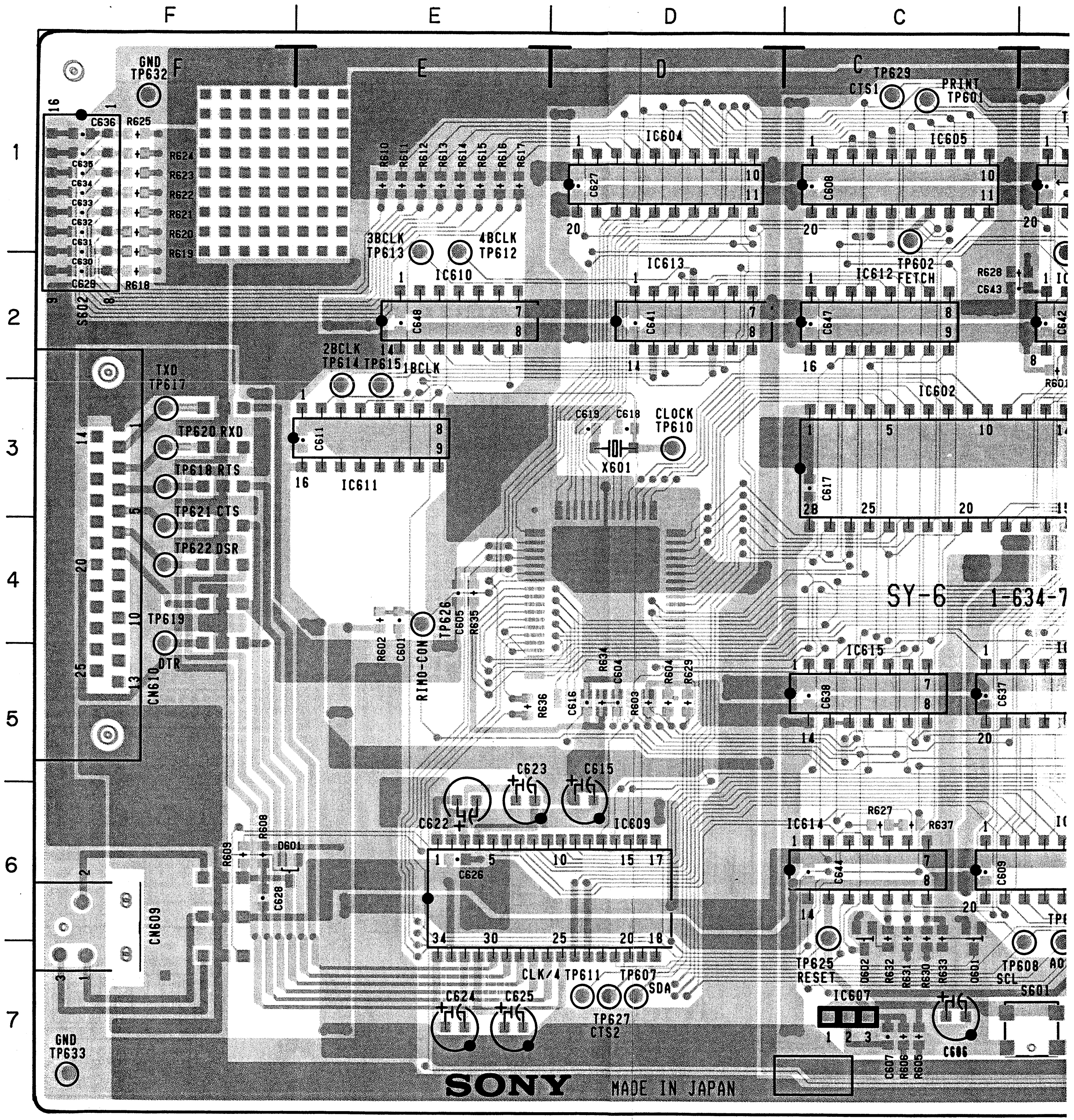
- ░ : Conductor side pattern
- ▨ : Cmponent side pattern

SY-6 (VIDEO PROCESS (DIGITAL))

- ▨ : Conductor side pattern
- ▨ : Cmponent side pattern

SY-6 Board

CN602	A-3	
CN603	A-1	
CN604	A-1	
CN605	A-7	
CN606	A-5	
CN607	A-5	
CN608	A-3	
CN609	F-6	
CN610	F-5	
D601	F-6	S
FL601	F-3	
FL602	F-3	
FL603	F-5	
FL604	F-4	
FL605	F-4	
FL606	F-3	
FL607	F-4	
FL608	F-7	
FL609	F-6	
FL610	F-6	
FL611	A-4	
FL612	A-4	
FL613	B-4	
FL614	A-5	
FL615	B-5	
FL616	A-5	
FL617	B-5	
FL618	A-5	
FL619	A-6	
FL620	B-5	
FL621	A-6	
FL622	B-6	
FL623	B-6	
IC601	D-4	
IC602	C-3	
IC603	B-5	
IC604	D-1	
IC605	C-1	
IC606	B-6	
IC607	C-7	
IC608	B-1	
IC609	D-6	
IC610	E-2	
IC611	E-3	
IC612	C-2	
IC613	D-2	
IC614	C-6	
IC615	C-5	
IC616	B-2	
Q601	C-7	S
Q602	C-7	S
S601	B-7	
S602	F-1	
TP601	C-1	
TP602	C-1	
TP603	B-1	
TP604	B-1	
TP605	B-1	
TP606	B-2	
TP607	D-7	
TP608	B-7	
TP609	B-7	
TP610	D-3	
TP611	D-7	
TP612	E-1	
TP613	E-1	
TP614	E-3	
TP615	E-3	
TP617	F-3	
TP618	F-3	
TP619	F-5	
TP620	F-3	
TP621	F-4	
TP622	F-4	
TP623	B-7	
TP624	B-7	
TP625	C-7	
TP626	E-4	
TP627	D-7	
TP628	B-1	
TP629	C-1	
TP630	B-7	
TP631	A-1	
TP632	F-1	
TP633	F-5	
X601	D-3	


F
E
D
C
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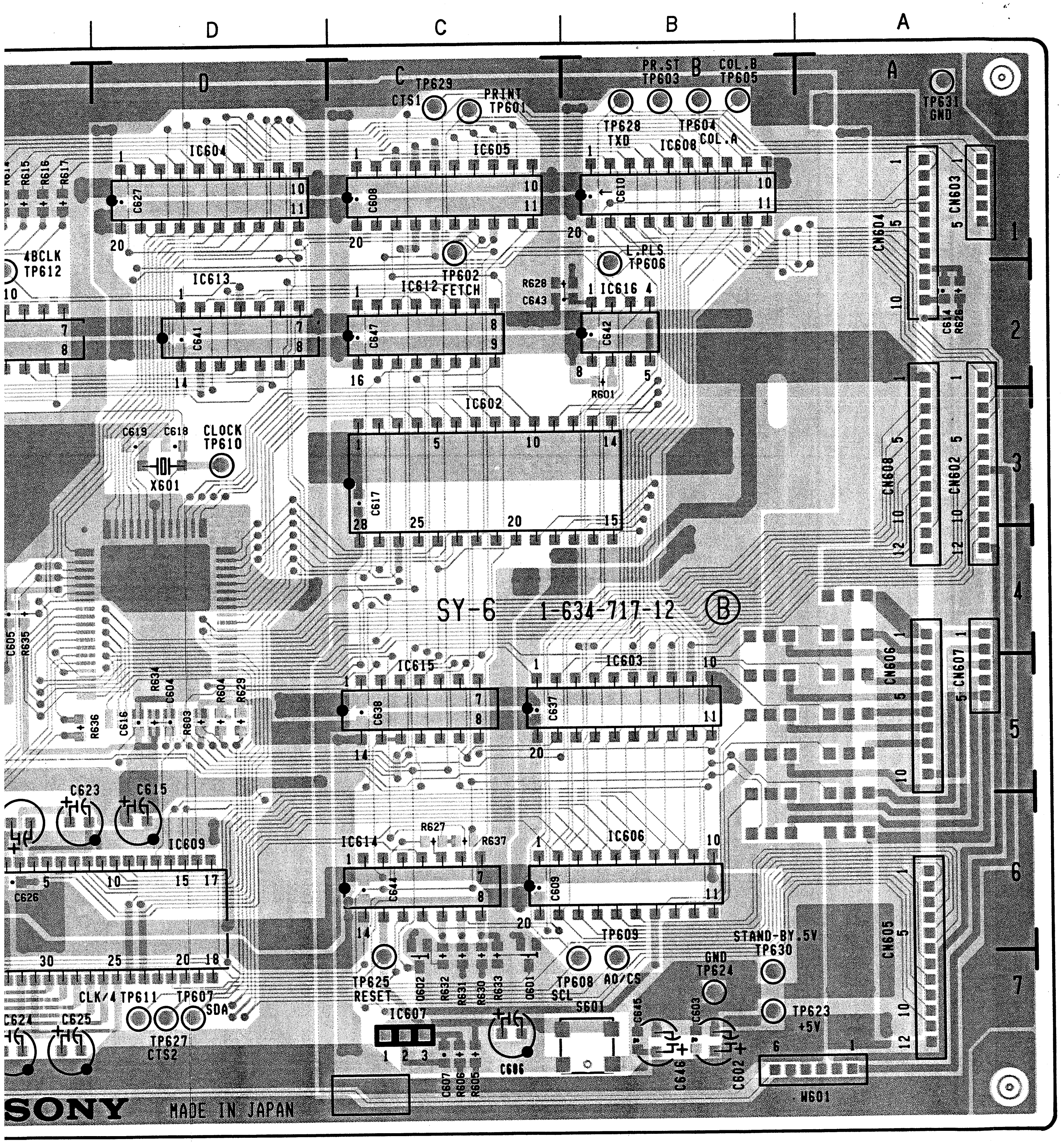
6
7
GND TP632
TP629 CTS1
PRINT TP601
IC604
IC605
IC613
IC612
IC610
TP602 FETCH
3BCLK TP613
4BCLK TP612
2BCLK TP614
TP615
1BCLK
IC602
IC611
TXD TP617
TP620 RXD
TP618 RTS
TP621 CTS
TP622 DSR
TP619
DTR
CN610
C619
C618
CLOCK TP610
X601
SY-6 1-634-7
TP626
RIMO-CON
IC615
C623
C615
C622
IC609
IC614
R627
R637
C626
CN609
CLK/4 TP611
TP607 SDA
TP627 CTS2
C624
C625
TP625 RESET
IC607
C606
TP608 SCL
S601
S602
GND TP633
SONY
MADE IN JAPAN


D
C
B
A
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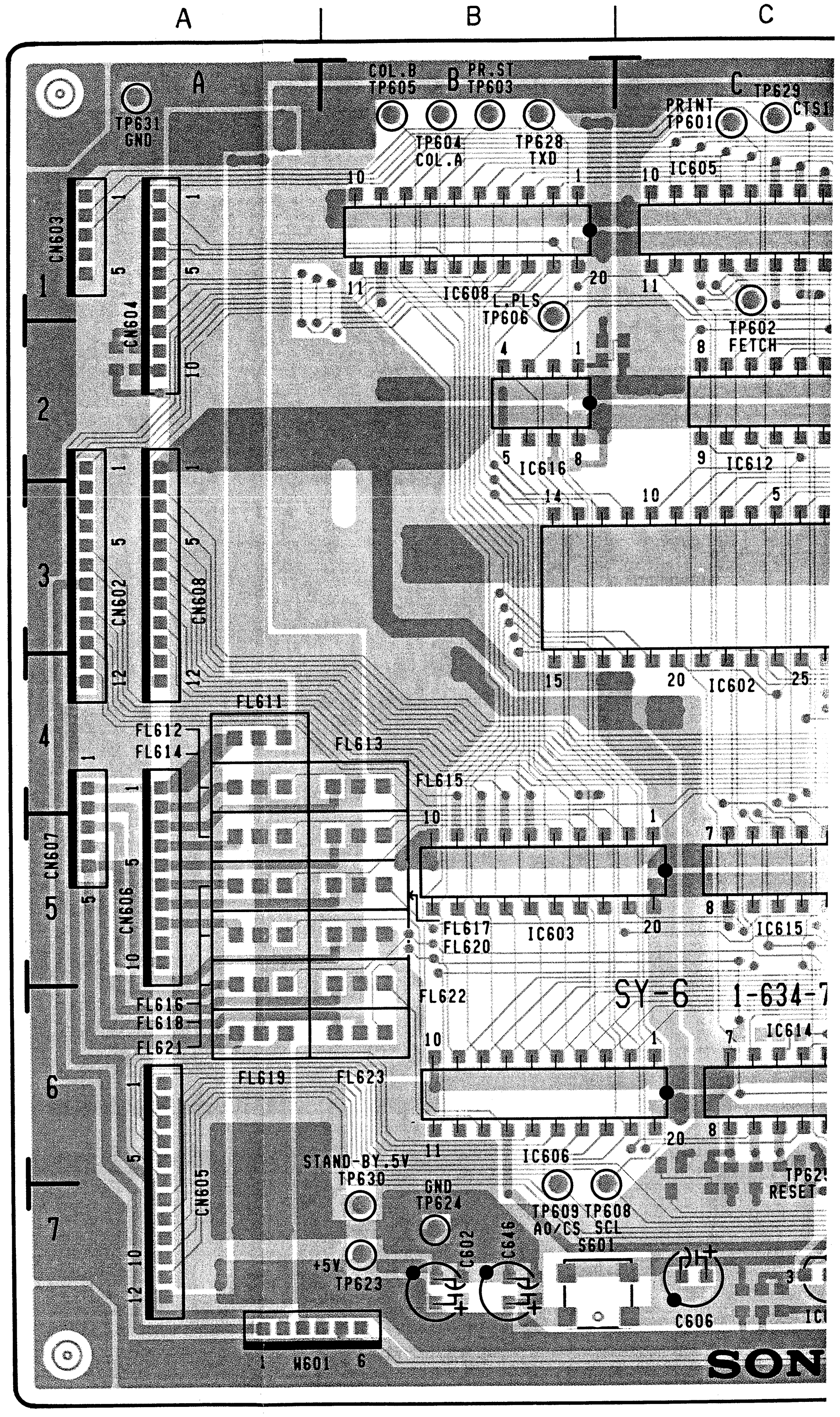
7
TP629
CTS1
PRINT
TP601
PR.ST
TP603
COL.B
TP605
TP631
GND
TP628
TXD
TP604
COL.A
IC604
IC605
IC608
IC613
IC612
TP602
FETCH
L.PLS
TP606
IC616
R628
C643
4BCLK
TP612
IC602
C619
C618
CLOCK
TP610
X601
CN604
CN603
CN608
CN602
CN606
CN607
CN605
SY-6 1-634-717-12 Ⓑ
IC615
IC603
IC614
IC606
R627
R637
IC609
C623
C615
TP625
RESET
IC607
TP608
SCL
TP609
A0/CS
S601
STAND-BY.5V
TP630
GND
TP624
TP623
+5V
C606
C646
C602
W601
CLK/4
TP611
TP607
SDA
TP627
CTS2
C624
C625
SONY
MADE IN JAPAN


A
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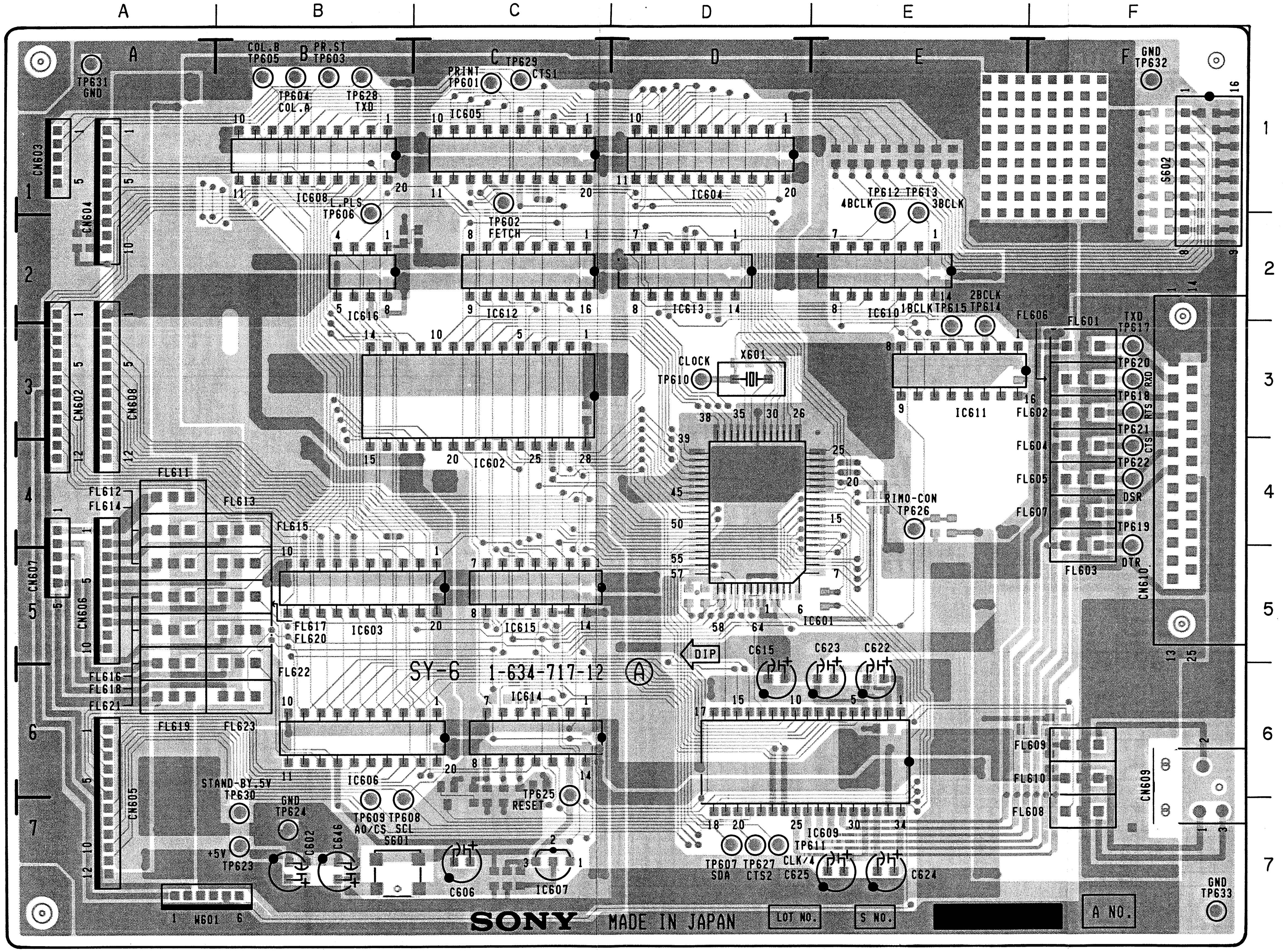
TP631
GND
COL.B
TP605
PR.ST
TP603
PRINT
TP601
TP629
TP604
COL.A
TP628
TXD
IC605
IC608
L.PLS
TP606
TP602
FETCH
IC616
IC612
IC602
CN603
CN604
CN602
CN608
FL611
FL612
FL613
FL614
FL615
FL616
FL617
FL618
FL619
FL620
FL621
FL622
FL623
CN607
CN606
CN605
IC603
IC615
SY-6 1-634-7
IC614
IC606
STAND-BY.5V
TP630
GND
TP624
TP609
A0/CS
TP608
SCL
S601
TP62
RESET
+5V
TP623
C602
C646
C606
W601
SON

SY-6 —SOLDERING SIDE—
1-634-717-12
UP-3000P


A
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C
D
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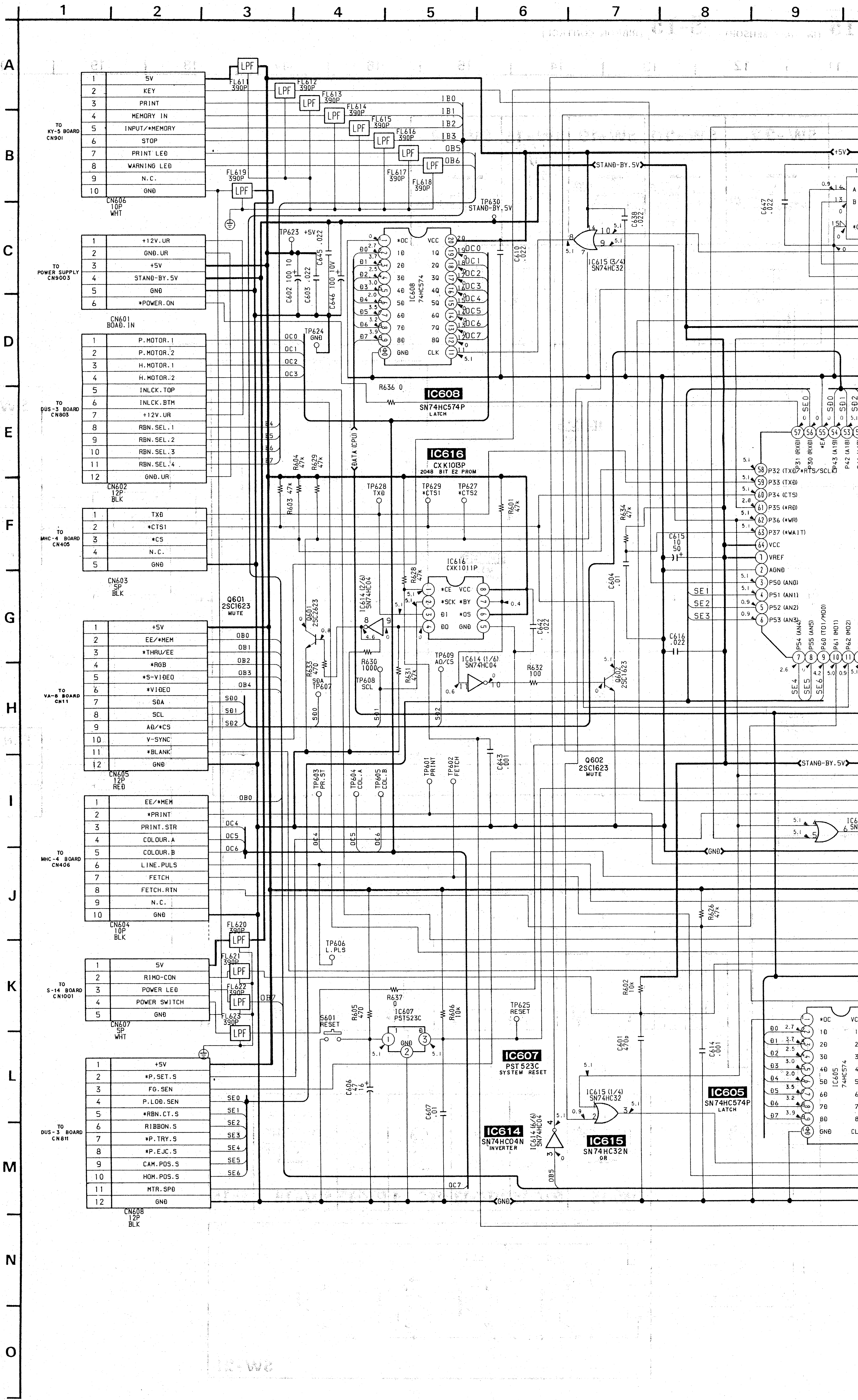
TP631 GND
COL.B TP605
PR.ST TP603
TP604 COL.A
TP628 TXD
PRINT TP601
TP629 CTS1
GND TP632
IC605
IC608
IC604
L.PLS TP606
TP602 FETCH
TP612 4BCLK
TP613 3BCLK
S602
CN603
CN604
CN602
CN608
CN607
CN606
CN605
CN610
CN609
IC616
IC612
IC613
IC610
1BCLK TP615
2BCLK TP614
FL606
FL601
TXD TP617
TP620 RXD
TP618 RTS
TP621 CTS
TP622 DSR
TP619 DTR
FL602
FL604
FL605
FL607
FL603
CLOCK TP610
X601
IC611
IC602
IC601
RIMO-CON TP626
FL611
FL612
FL614
FL613
FL615
FL616
FL618
FL621
FL617
FL620
FL622
FL619
FL623
IC603
IC615
IC614
IC606
SY-6 1-634-717-12 Ⓐ
DIP
C615
C623
C622
IC609
FL609
FL610
FL608
STAND-BY 5V TP630
GND TP624
+5V TP623
C602
C646
TP609 A0/CS
TP608 SCL
S601
C606
IC607
TP625 RESET
TP607 SDA
TP627 CTS2
TP611 CLK/4
C625
C624
GND TP633
W601
SONY
MADE IN JAPAN
LOT NO.
S NO.
A NO.

SY-6 —COMPONENT SIDE—
1-634-717-12
UP-3000P

SY-6 (VIDEO PROCESS (DIGITAL))



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D
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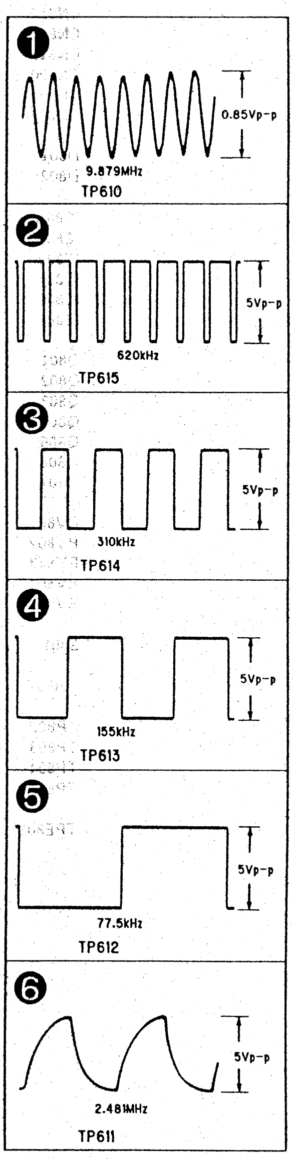
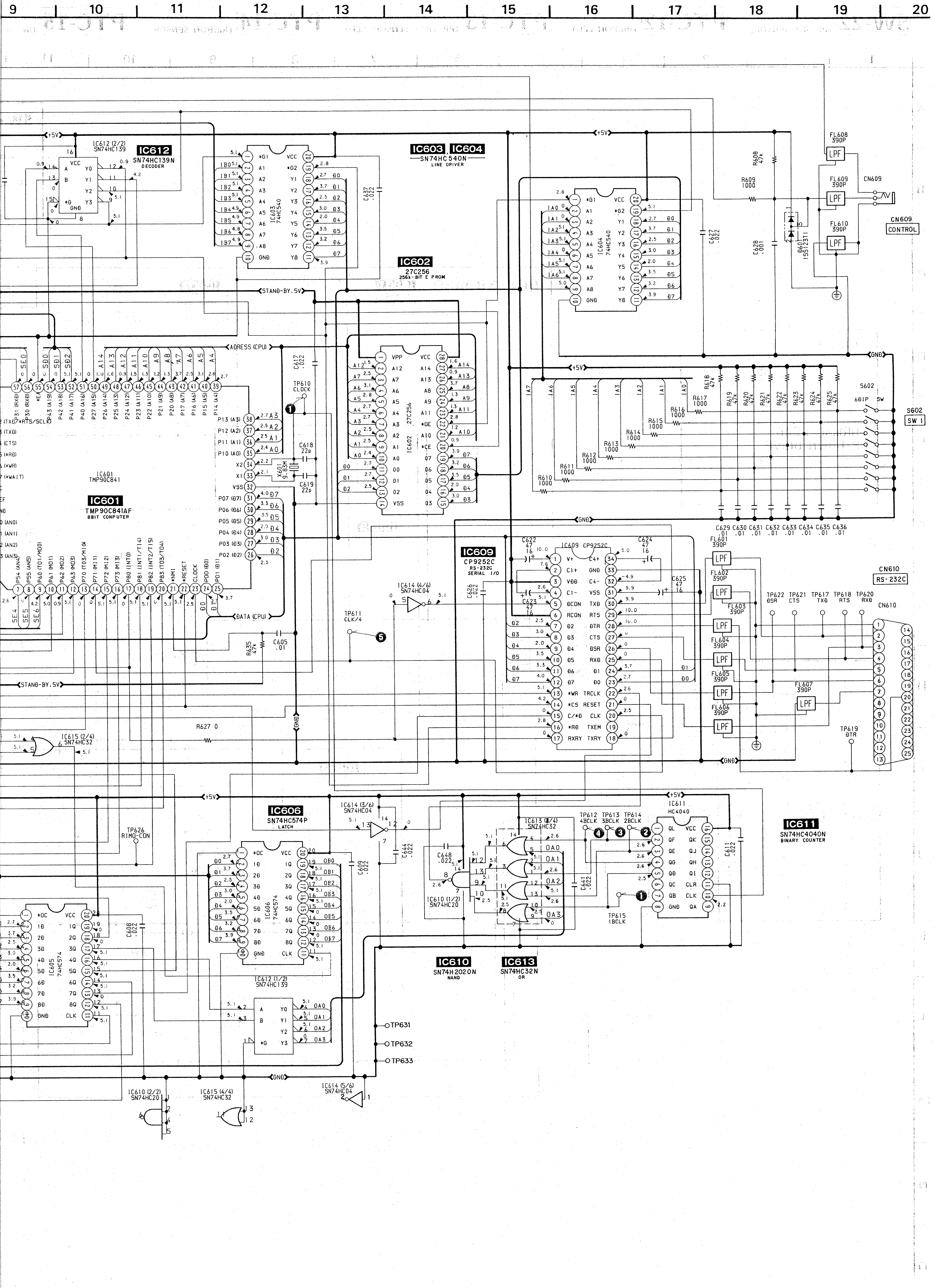
H
I
J
K
L
M
N
O
TO KY-5 BOARD CN901
1 5V
2 KEY
3 PRINT
4 MEMORY IN
5 INPUT/*MEMORY
6 STOP
7 PRINT LED
8 WARNING LED
9 N.C.
10 GND
CN606 10P WHT
TO POWER SUPPLY CN9003
1 +12V.UR
2 GND.UR
3 +5V
4 STAND-BY.5V
5 GND
6 *POWER.ON
CN601 BOAD.IN
TO DUS-3 BOARD CN803
1 P.MOTOR.1
2 P.MOTOR.2
3 H.MOTOR.1
4 H.MOTOR.2
5 INLCK.TOP
6 INLCK.BTM
7 +12V.UR
8 RBN.SEL.1
9 RBN.SEL.2
10 RBN.SEL.3
11 RBN.SEL.4
12 GND.UR
CN602 12P BLK
TO MHC-4 BOARD CN405
1 TXD
2 *CTS1
3 *CS
4 N.C.
5 GND
CN603 5P BLK
TO VA-8 BOARD CN11
1 +5V
2 EE/*MEM
3 *THRU/EE
4 *RGB
5 *S-VIDEO
6 *VIDEO
7 SDA
8 SCL
9 A0/*CS
10 V-SYNC
11 *BLANK
12 GND
CN605 12P RED
TO MHC-4 BOARD CN406
1 EE/*MEM
2 *PRINT
3 PRINT.STR
4 COLOUR.A
5 COLOUR.B
6 LINE.PULS
7 FETCH
8 FETCH.RTN
9 N.C.
10 GND
CN604 10P BLK
TO S-14 BOARD CN1001
1 5V
2 RIMO-CON
3 POWER LED
4 POWER SWITCH
5 GND
CN607 5P WHT
TO DUS-3 BOARD CN811
1 +5V
2 *P.SET.S
3 FG.SEN
4 P.LOD.SEN
5 *RBN.CT.S
6 RIBBON.S
7 *P.TRY.S
8 *P.EJC.S
9 CAM.POS.S
10 HOM.POS.S
11 MTR.SPD
12 GND
CN608 12P BLK
LPF
FL611 390P
FL612 390P
FL613 390P
FL614 390P
FL615 390P
FL616 390P
FL617 390P
FL618 390P
FL619 390P
FL620 390P
FL621 390P
FL622 390P
FL623 390P
IB0
IB1
IB2
IB3
OB5
OB6
TP630 STAND-BY.5V
STAND-BY.5V
+5V
TP623 +5V
TP624 GND
C602 10
C603 100
C645 .022
C646 10V 100
IC608
SN74HC574P
LATCH
R636 0
IC616
CX K1013P
2048 BIT E2 PROM
TP628 TXD
TP629 *CTS1
TP627 *CTS2
R601 47k
R603 47k
R604 47k
R629 47k
DATA (CPU)
IC616 CXK1011P
*CE VCC
*SCK *BY
DI *OS
DO GND
R628 47k
IC614 (2/6) SN74HC04
Q601 2SC1623
Q601 2SC1623 MUTE
R630 1000
TP608 SCL
SDA TP607
R633 470
R631 47k
TP609 A0/CS
IC614 (1/6) SN74HC04
R632 100
Q602 2SC1623
Q602 2SC1623 MUTE
C642 .022
C643 .001
C604 .01
C610 .022
C638 .022
C647 .022
C615 10 50
C616 .022
R634 47k
IC615 (3/4) SN74HC32
TP603 PR.ST
TP604 COL.A
TP605 COL.B
TP601 PRINT
TP602 FETCH
TP606 L.PLS
S601 RESET
R605 470
R637 0
IC607 PST523C
R606 10k
TP625 RESET
IC607
PST523C
SYSTEM RESET
C606 47
C607 .01
IC614
SN74HC04N
INVERTER
IC614 (6/6) SN74HC04
IC615 (1/4) SN74HC32
IC615
SN74HC32N
OR
R602 10k
C601 470n
C614 .001
R626 47k
IC605
SN74HC574P
LATCH
IC605 74HC574
OB0
OB1
OB2
OB3
OB4
OB7
OC0
OC1
OC2
OC3
OC4
OC5
OC6
OC7
SD0
SD1
SD2
SE0
SE1
SE2
SE3
SE4
SE5
SE6
E4
E5
E6
E7
P32 (TXD)*RTS/SCLK
P33 (TXD)
P34 (CTS)
P35 (*RD)
P36 (*WR)
P37 (*WAIT)
VCC
VREF
AGND
P50 (AN0)
P51 (AN1)
P52 (AN2)
P53 (AN3)
P54 (AN4)
P55 (AN5)
P60 (TO1/MOO)
P61 (MO1)
P62 (MO2)
P31 (RXD)
P30 (RXD)
P43 (A19)
P42 (A18)
GND

SY-6 Board

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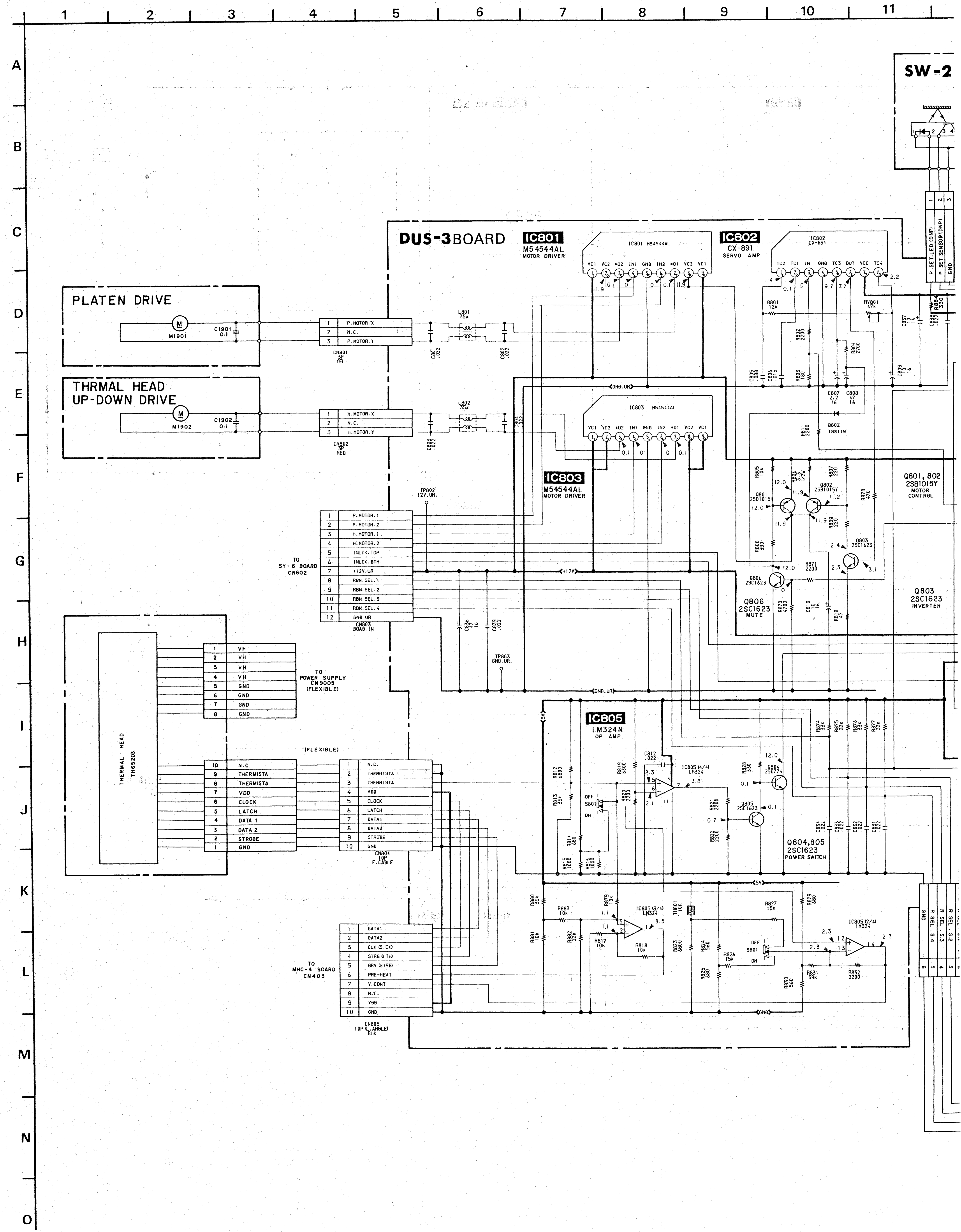
IC612
SN74HC139N
DECODER
IC612 (2/2)
SN74HC139
IC603 IC604
SN74HC540N
LINE DRIVER
IC603
74HC540
IC604
74HC540
IC602
27C256
256k-BIT E PROM
IC601
TMP90C841
IC601
TMP90C841AF
8BIT COMPUTER
IC609
CP9252C
RS-232C
SERIAL I/O
IC606
SN74HC574P
LATCH
IC605
74HC574
IC612 (1/2)
SN74HC139
IC610
SN74H2020N
NAND
IC613
SN74HC32N
OR
IC611
SN74HC4040N
BINARY COUNTER
IC611
HC4040
IC613 (1/4)
SN74HC32
IC610 (1/2)
SN74HC20
IC610 (2/2)
SN74HC20
IC614 (3/6)
SN74HC04
IC614 (4/6)
SN74HC04
IC614 (5/6)
SN74HC04
IC615 (2/4)
SN74HC32
IC615 (4/4)
SN74HC32
+5V
STAND-BY.5V
ADRESS (CPU)
DATA (CPU)
GND
TP610
CLOCK
TP611
CLK/4
TP612
4BCLK
TP613
3BCLK
TP614
2BCLK
TP615
1BCLK
TP626
RIMO-CON
TP631
TP632
TP633
TP622
ΦSR
TP621
CTS
TP617
TXΦ
TP618
RTS
TP620
RXΦ
TP619
ΦTR
X601
9.83M
C617
.022
C618
22p
C619
22p
C605
.01
R635
47k
R627 0
C632
.022
C627
.022
C628
.001
D601
1SS123T1
R608
47k
R609
1000
FL608
390P
FL609
390P
FL610
390P
LPF
CN609
CN609
CONTROL
S602
601P
SW
S602
SW 1
R610
1000
R611
1000
R612
1000
R613
1000
R614
1000
R615
1000
R616
1000
R617
1000
R618
47k
R619
47k
R620
47k
R621
47k
R622
47k
R623
47k
R624
47k
R625
47k
C629
.01
C630
.01
C631
.01
C632
.01
C633
.01
C634
.01
C635
.01
C636
.01
C622
47
16
C623
47
16
C624
47
16
C625
47
16
C626
.022
FL601
390P
FL602
390P
FL603
390P
FL604
390P
FL605
390P
FL606
390P
FL607
390P
CN610
RS-232C
CN610
C644
.022
C648
.022
C641
.022
C611
.022
C609
.022
C608
.022

DUS-3 (SYSTEM CONTROL) **SW-14** (PP SET SENSOR) **SW-15** (P EJECT SENSOR) **SW-16** (FG SENSOR) **SW-17** (CAM, HM SENSOR) **S**

SW-22 (PP SET SENSOR) **PTC-12** (RIBBON LED) **PTC-13** (PP TRAY SENSOR, LED) **PTC-14** (RIBBON SENSOR) **PTC-15** (IN TRAY S



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A
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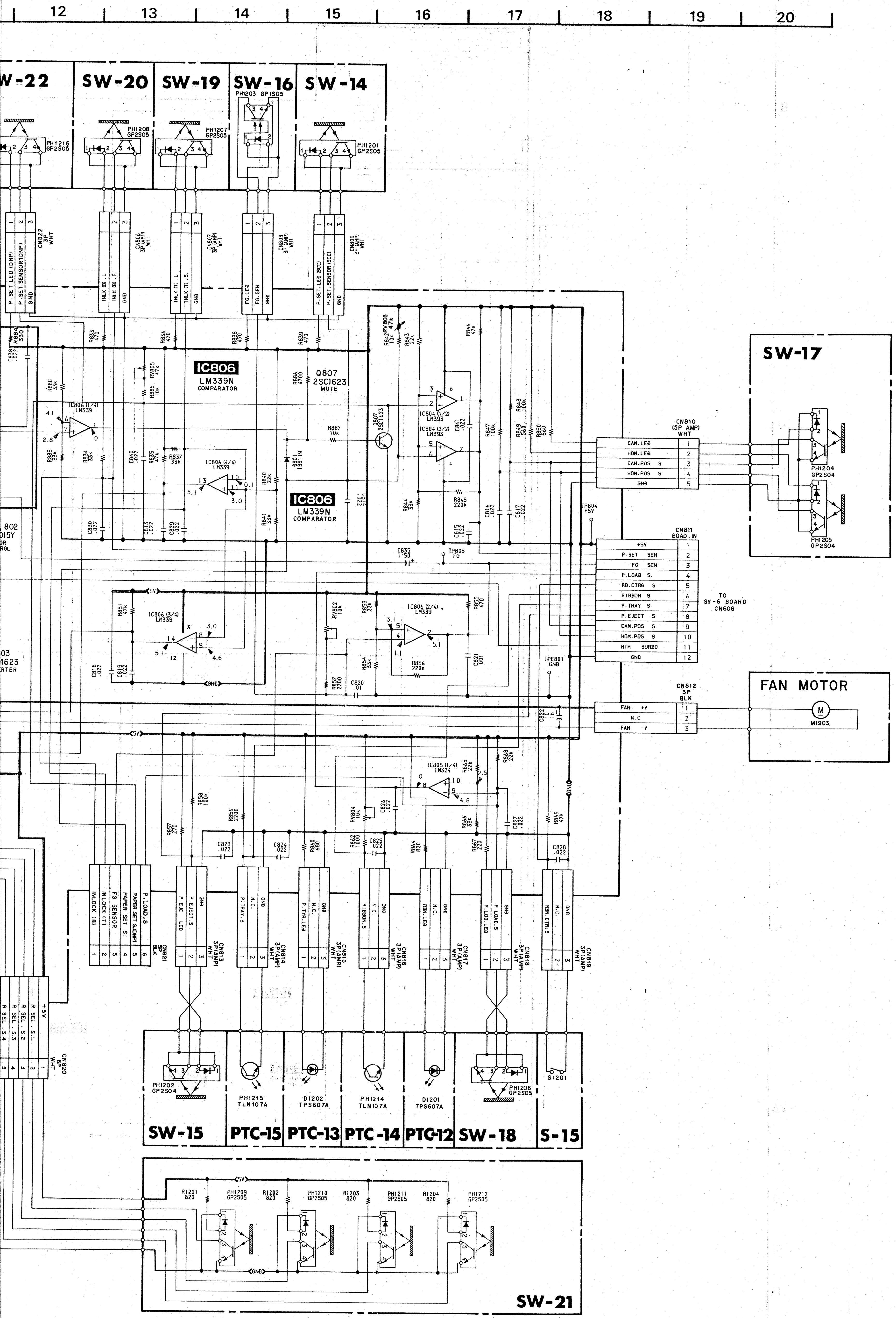
I
J
K
L
M
N
O
SW-2
P.SET.LED(DNP)
P.SET.SENSOR(DNP)
GND
DUS-3BOARD
IC801
M54544AL
MOTOR DRIVER
IC801 M54544AL
VC1 VC2 *D2 IN1 GND IN2 *D1 VC2 VC1
IC802
CX-891
SERVO AMP
IC802 CX-891
TC2 TC1 IN GND TC3 OUT VCC TC4
PLATEN DRIVE
M1901
C1901 0.1
P.MOTOR.X
N.C.
P.MOTOR.Y
CN801 3P YEL
L801 35μ
C801 .022
C802 .022
THRMAL HEAD UP-DOWN DRIVE
M1902
C1902 0.1
H.MOTOR.X
N.C.
H.MOTOR.Y
CN802 3P RED
L802 35μ
C803 .022
C804 .022
IC803 M54544AL
IC803
M54544AL
MOTOR DRIVER
GND.UR
R801 12k
RV801 47k
R802 2200
R803 180
R804 2700
C805 .068
C806 .015
C807 2.2 16
C808 47 16
C809 10 16
C837 10 16
C838 .022
D802 1SS119
R811 2200
R805 10k
R806 3.3 1/2W
R807 220
R878 470
Q801 2SB1015Y
Q802 2SB1015Y
Q801, 802 2SB1015Y MOTOR CONTROL
R808 390
R809 220
R871 2200
Q803 2SC1623
Q803 2SC1623 INVERTER
Q806 2SC1623
Q806 2SC1623 MUTE
R870 4700
C810 10 16
R810 47k
TP802 12V.UR.
TO SY-6 BOARD CN602
P.MOTOR.1
P.MOTOR.2
H.MOTOR.1
H.MOTOR.2
INLCK.TOP
INLCK.BTM
+12V.UR
RBN.SEL.1
RBN.SEL.2
RBN.SEL.3
RBN.SEL.4
GND UR
CN803 BOAB.IN
+12V
C836 47 16
C839 .022
TP803 GND.UR.
THERMAL HEAD TH65203
VH
GND
TO POWER SUPPLY CN9005 (FLEXIBLE)
(FLEXIBLE)
N.C.
THERMISTA
VDD
CLOCK
LATCH
DATA 1
DATA 2
STROBE
GND
CN804 10P F.CABLE
IC805
LM324N
OP AMP
5V
R812 6800
R813 39k
R814 680
R815 1000
R816 100
S801 OFF ON
R819 3300
R820 2200
C812 .022
IC805 (4/4) LM324
R828 330
Q804 2SD774
Q805 2SC1623
R821 2200
R822 2200
Q804,805 2SC1623 POWER SWITCH
R874 33k
R875 33k
R876 33k
R877 33k
C834 .022
C833 .022
C832 .022
C831 .022
R880 39k
R881 10k
R883 10k
R882 22k
R879 10k
R817 10k
R818 10k
IC805 (3/4) LM324
TH801 10k
R823 6800
R824 560
R825 680
R826 15k
R827 15k
R829 680
R830 560
R831 39k
R832 2200
IC805 (2/4) LM324
GND
TO MHC-4 BOARD CN403
DATA1
DATA2
CLK (S.CK)
STRB (LTH)
BRY (STRB)
PRE-HEAT
V.CONT
N.C.
VDD
GND
CN805 10P (L.ANGLE) BLK
R SEL.S.4
R SEL.S.3
R SEL.S.2

SW-18 (PP LOAD SENSOR) **SW-19** (IN LOCK (T)) **SW-20** (IN LOCK (B)) **SW-21** (RIBBON SELECT)

TRAY SENSOR) **S-15** (RIBBON CONTROL)


12
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W-22
SW-20
SW-19
SW-16
SW-14
PH1216 GP2S05
PH1208 GP2S05
PH1207 GP2S05
PH1203 GP1S05
PH1201 GP2S05
CN822 3P WHT
CN806 3P (AMP) WHT
CN807 3P (AMP) WHT
CN808 3P (AMP) WHT
CN809 3P (AMP) WHT
P.SET.LED (DNP)
P.SET.SENSOR(DNP)
GND
INLK (B).L
INLK (B).S
INLK (T).L
INLK (T).S
FG.LED
FG.SEN
P.SET.LED (SCC)
P.SET.SENSOR (SCC)
IC806
LM339N
COMPARATOR
Q807
2SC1623
MUTE
IC804 (1/2) LM393
IC804 (2/2) LM393
IC806 (1/4) LM339
IC806 (4/4) LM339
IC806 (3/4) LM339
IC806 (2/4) LM339
IC805 (1/4) LM324
D801 1SS119
SW-17
CN810 (5P AMP) WHT
CAM.LED
HOM.LED
CAM.POS S
HOM.POS S
GND
PH1204 GP2S04
PH1205 GP2S04
TP804 +5V
CN811 BOAD.IN
+5V
P.SET SEN
FG SEN
P.LOAD S.
RB.CTRG S
RIBBON S
P.TRAY S
P.EJECT S
CAM.POS S
HOM.POS S
MTR SURBO
GND
TO SY-6 BOARD CN608
TPE801 GND
TP805 FG
CN812 3P BLK
FAN +V
N.C
FAN -V
FAN MOTOR
M1903
CN821 6P BLK
INLOCK (B)
INLOCK (T)
FG SENSOR
PAPER SET S.
PAPER SET S.(DNP)
P.LOAD.S
CN813 3P (AMP) WHT
CN814 3P (AMP) WHT
CN815 3P (AMP) WHT
CN816 3P (AMP) WHT
CN817 3P (AMP) WHT
CN818 3P (AMP) WHT
CN819 3P (AMP) WHT
CN820 6P WHT
+5V
R SEL. S.1
R SEL. S.2
R SEL. S.3
R SEL. S.4
PH1202 GP2S04
PH1215 TLN107A
D1202 TPS607A
PH1214 TLN107A
D1201 TPS607A
PH1206 GP2S05
S1201
SW-15
PTC-15
PTC-13
PTC-14
PTC-12
SW-18
S-15
R1201 820
PH1209 GP2S05
R1202 820
PH1210 GP2S05
R1203 820
PH1211 GP2S05
R1204 820
PH1212 GP2S05
SW-21

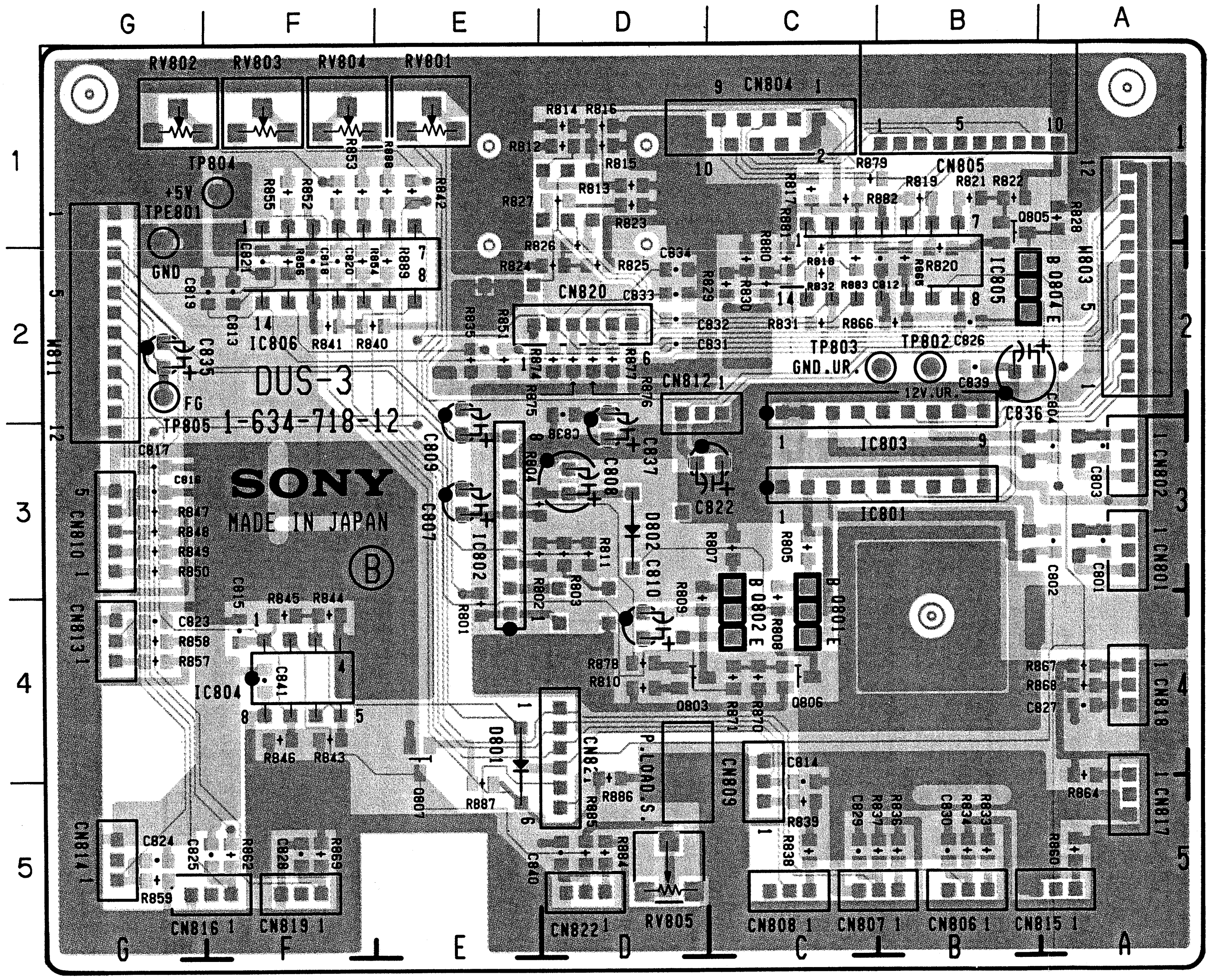
DUS-3 Board

CN801	A-3	
CN802	A-3	
CN804	C-1	
CN805	B-1	
CN806	B-5	
CN807	C-5	
CN808	C-5	
CN809	C-5	
CN810	G-3	
CN812	D-2	
CN813	G-3	
CN814	G-5	
CN815	A-5	
CN816	F-5	
CN817	A-5	
CN818	A-4	
CN819	F-5	
CN820	D-2	
CN821	D-4	
CN822	D-5	
D801	E-4	
D802	D-3	
IC801	B-3	
IC802	E-3	
IC803	B-2	
IC804	F-4	
IC805	B-2	
IC806	F-2	
Q801	C-4	
Q802	C-4	
Q803	D-4	S
Q804	B-2	
Q805	B-1	S
Q806	C-4	S
Q807	E-4	S
RV801	E-1	
RV802	G-1	
RV803	F-1	
RV804	F-1	
RV805	D-5	
S801	D-1	
TH801	E-2	
TP802	B-2	
TP803	B-2	
TP804	F-1	
TP805	G-2	
TPE801	G-1	

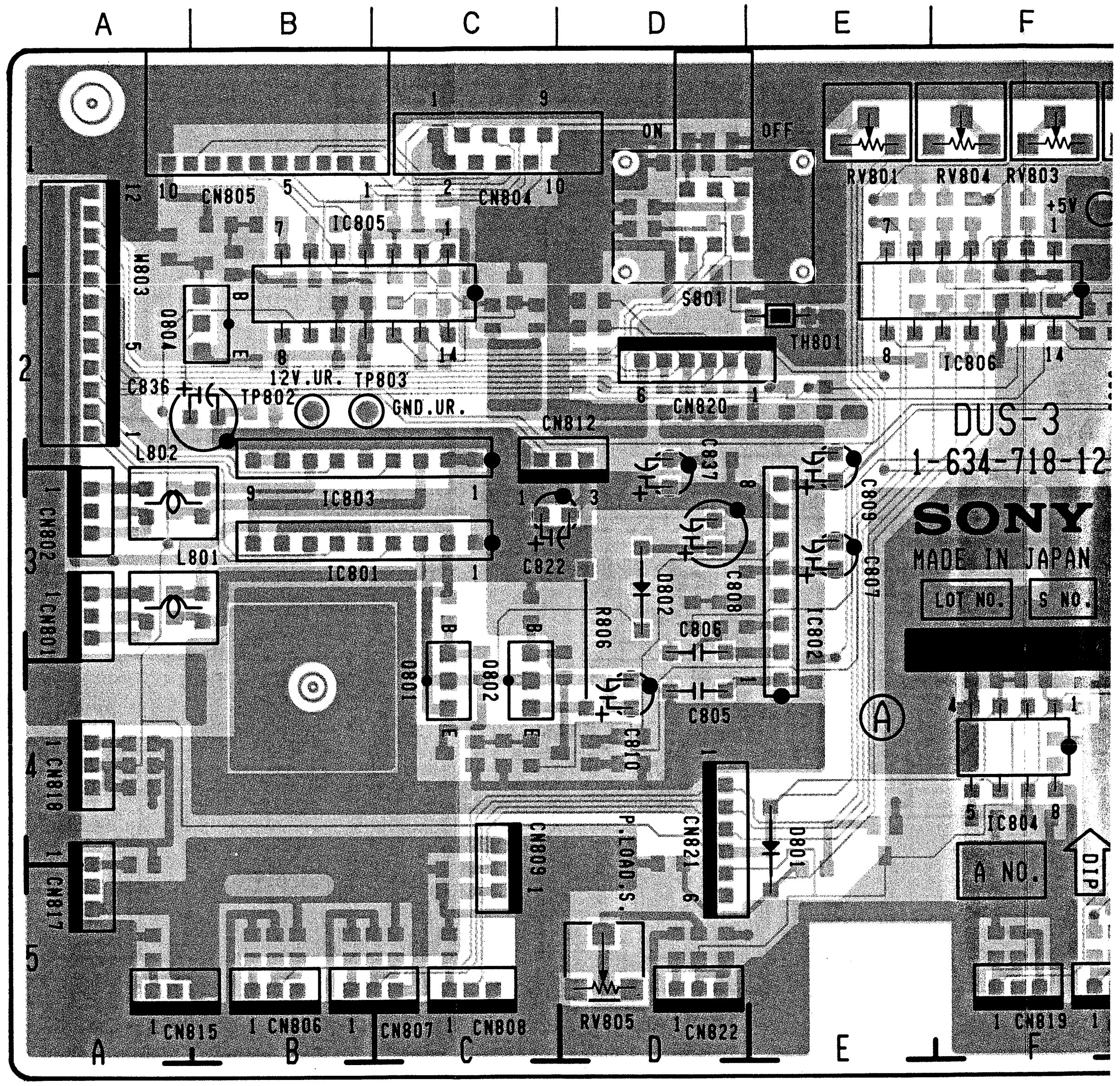
SYSTEM CONTROL SYSTEM CONTROL

DUS-3 (SYSTEM CONTROL) **SW-14** (PP SET SENSOR) **SW-15** (P EJECT SENSOR) **SW-16** (FG SENSOR) **SW-17** (CAM, HM SENSOR) **SW-18** (PP LOAD SENSOR) **SW-19** (IN LOCK (T)) **S**

PTC-15 (IN TRAY SENSOR) **S-15** (RIBBON CONTROL)


G
F
E
D
C
B
A
1
2
3
4
5
RV802
RV803
RV804
RV801
CN804
CN805
IC805
IC806
IC803
IC801
IC802
IC804
CN811
CN810
CN813
CN814
CN816
CN819
CN822
RV805
CN808
CN807
CN806
CN815
CN817
CN818
CN801
CN802
CN820
CN812
CN809
CN821
P.LOAD S.
TP804
TPE801
TP805
TP803
TP802
+5V
GND
FG
GND.UR.
12V.UR.
DUS-3
1-634-718-12
SONY
MADE IN JAPAN
Ⓑ
D801
D802
Q801
Q802
Q803
Q804
Q805
Q806
Q807

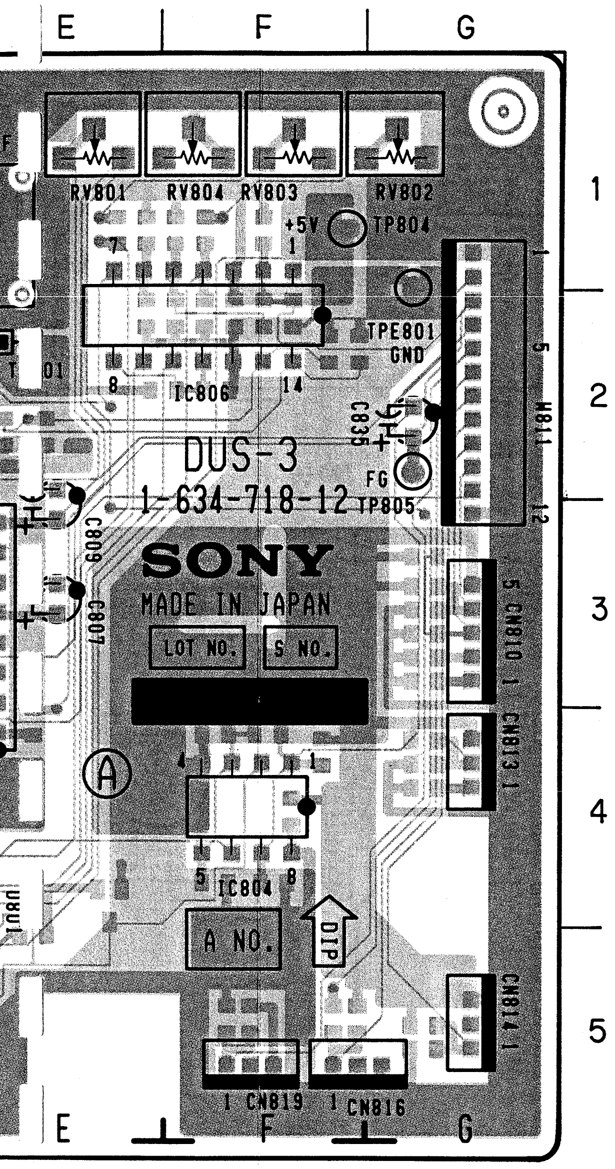
DUS-3 —SOLDERING SIDE—
1-634-718-12
UP-3000P


A
B
C
D
E
F
1
2
3
4
5
CN805
CN804
IC805
IC806
IC803
IC801
IC802
IC804
RV801
RV804
RV803
+5V
ON
OFF
S801
TH801
CN820
CN812
CN802
CN801
CN818
CN817
CN815
CN806
CN807
CN808
CN809
CN821
CN822
CN819
RV805
P.LOAD S.
L801
L802
TP802
TP803
12V.UR.
GND.UR.
DUS-3
1-634-718-12
SONY
MADE IN JAPAN
LOT NO.
S NO.
A NO.
DIP
Ⓐ
D801
D802
Q801
Q802
Q804

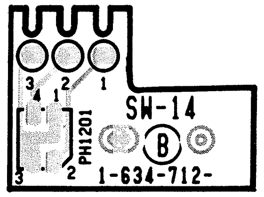
DUS-3 —CO
1-634-718-12
UP-3000P

▨ : Conductor side pattern
▨ : Cmponent side pattern

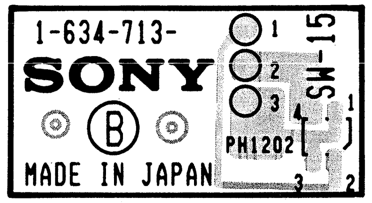
V-19 (IN LOCK (T)) **SW-20** (IN LOCK (B)) **SW-21** (RIBBON SELECT) **SW-22** (PP SET SENSOR) **PTC-12** (RIBBON LED) **PTC-13** (PP TRAY SENSOR, LED) **PTC-14** (RIBBON SENSOR)


E
F
G
1
2
3
4
5
RV801
RV804
RV803
RV802
+5V
TP804
TPE801
GND
IC806
8
14
C835
W811
DUS-3
1-634-718-12
FG
TP805
C809
C807
SONY
MADE IN JAPAN
LOT NO.
S NO.
CN810
CN813
A
IC804
A NO.
DIP
CN814
CN819
CN816

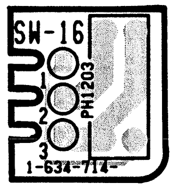
DUS-3 —COMPONENT SIDE—
1-634-718-12
UP-3000P


SW-14
PH1201
1-634-712-
B

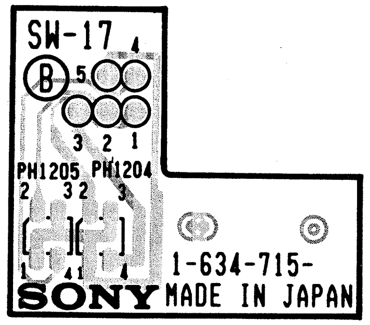
SW-14 —SOLDERING SIDE—
1-634-712-12
UP-3000P


1-634-713-
SONY
B
MADE IN JAPAN
SW-15
PH1202

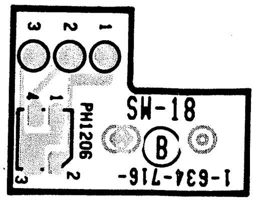
SW-15 —SOLDERING SIDE—
1-634-713-12
UP-3000P


SW-16
PH1203
1-634-714-

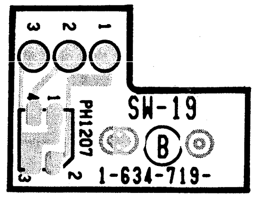
SW-16 —SOLDERING SIDE—
1-634-714-12
UP-3000P


SW-17
B
PH1205
PH1204
1-634-715-
SONY
MADE IN JAPAN

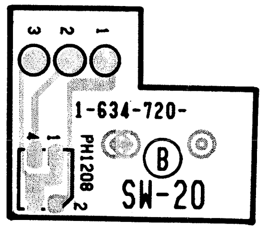
SW-17 —SOLDERING SIDE—
1-634-715-12
UP-3000P


SW-18
PH1206
B
1-634-716-

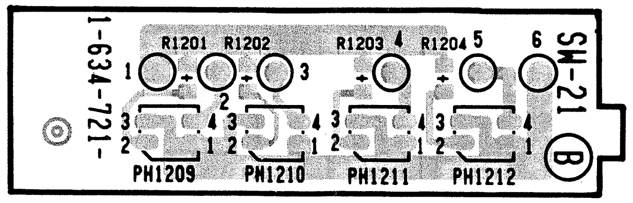
SW-18 —SOLDERING SIDE—
1-634-716-12
UP-3000P


SW-19
PH1207
B
1-634-719-

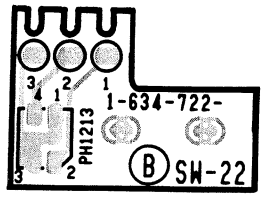
SW-19 —SOLDERING SIDE—
1-634-719-12
UP-3000P


1-634-720-
PH1208
B
SW-20

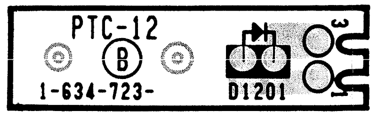
SW-20 —SOLDERING SIDE—
1-634-720-12
UP-3000P


1-634-721-
R1201
R1202
R1203
R1204
PH1209
PH1210
PH1211
PH1212
SW-21
B

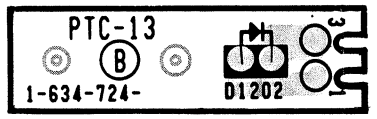
SW-21 —SOLDERING SIDE—
1-634-721-12
UP-3000P


PH1213
1-634-722-
B
SW-22

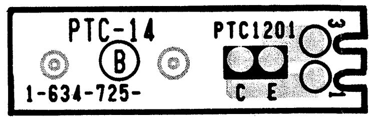
SW-22 —SOLDERING SIDE—
1-634-722-12
UP-3000P


PTC-12
B
1-634-723-
D1201

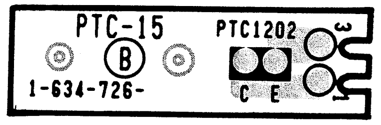
PTC-12 —SOLDERING SIDE—
1-634-723-12
UP-3000P


PTC-13
B
1-634-724-
D1202

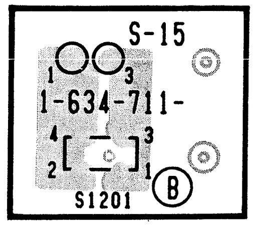
PTC-13 —SOLDERING SIDE—
1-634-724-12
UP-3000P


PTC-14
PTC1201
B
1-634-725-
C E

PTC-14 —SOLDERING SIDE—
1-634-725-12
UP-3000P


PTC-15
PTC1202
B
1-634-726-
C E

PTC-15 —SOLDERING SIDE—
1-634-726-12
UP-3000P


S-15
1-634-711-
S1201
B

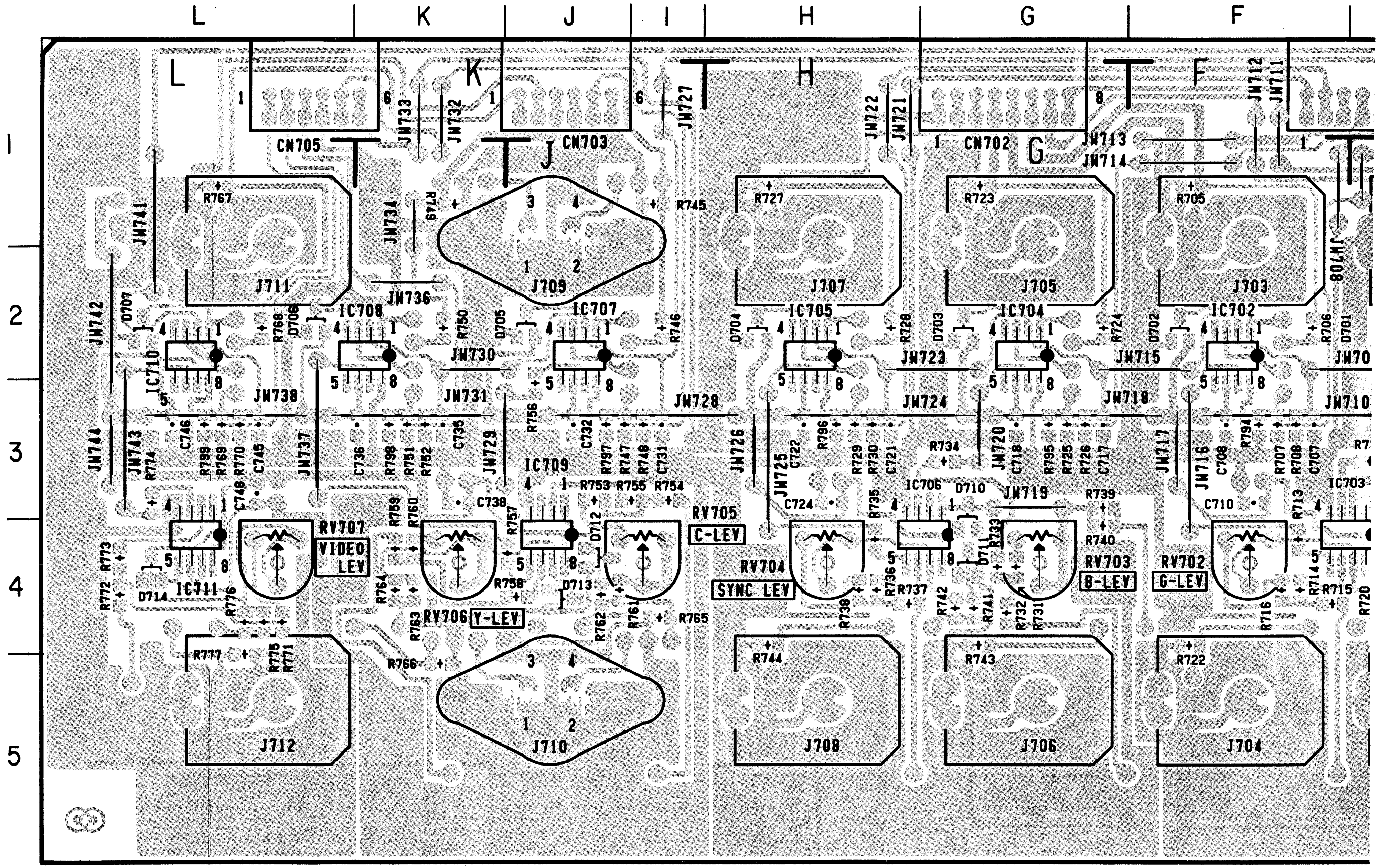
S-15 —SOLDERING SIDE—
1-634-711-12
UP-3000P

nductor side pattern
mp ent side pattern

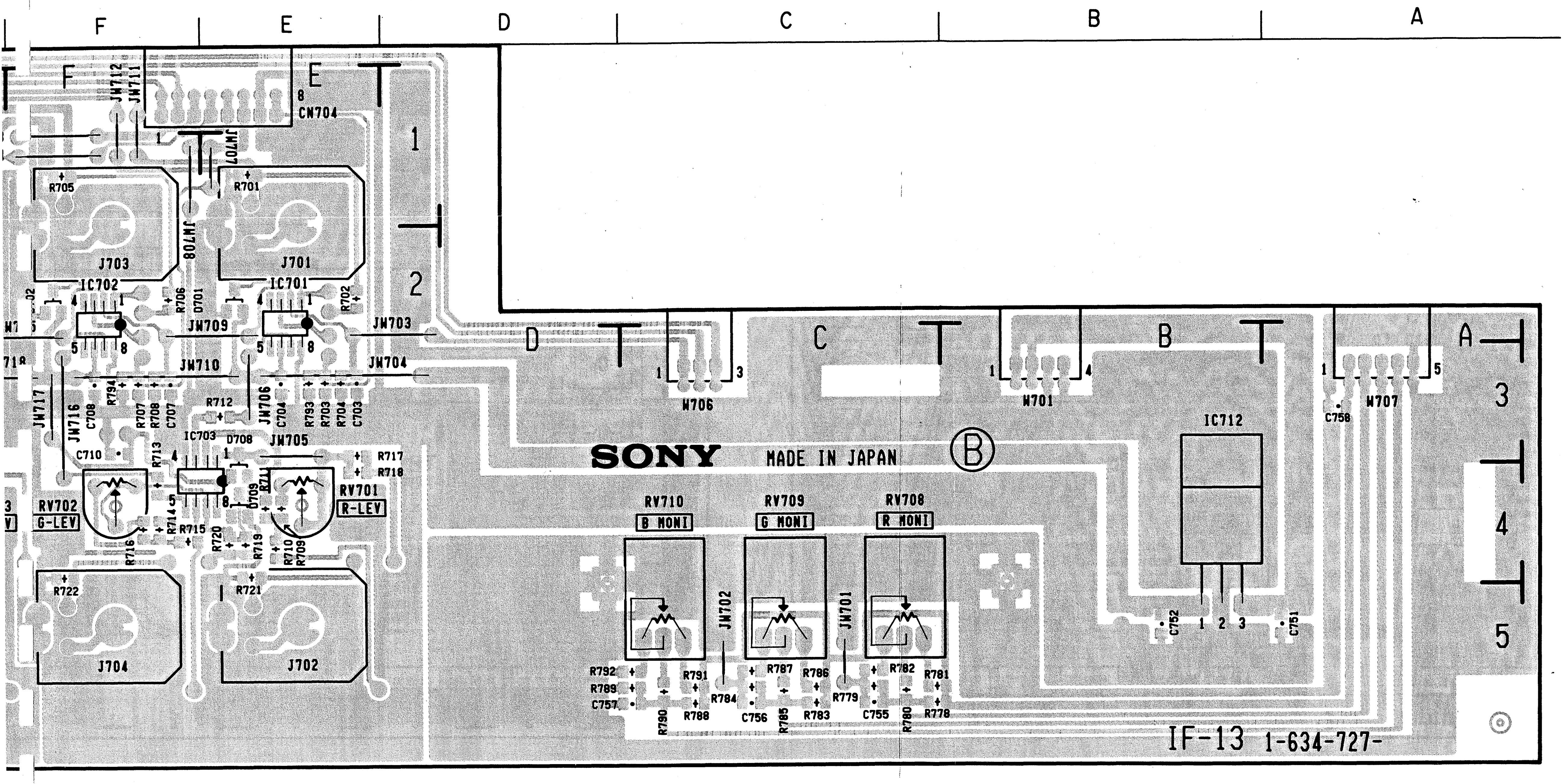
IF-13 (R · G · B ENCODER) DSC-4 (COLOR ADJUSTMENT)

IF-13 Board

CN702	G-1
CN703	J-1
CN704	E-1
CN705	L-1
D701	E-2
D702	F-2
D703	G-2
D704	H-2
D705	J-2
D706	L-2
D707	L-2
D708	E-3
D709	E-4
D710	G-3
D711	G-4
D712	J-4
D713	J-4
D714	L-4
FL701	E-1
FL702	E-5
FL703	F-1
FL704	F-5
FL705	G-1
FL706	G-5
FL707	H-1
FL708	H-5
FL709	I-1
FL710	I-4
FL711	K-1
FL712	K-4
FL713	L-1
FL714	L-5
IC701	E-2
IC702	F-2
IC703	E-4
IC704	G-2
IC705	H-2
IC706	G-4
IC707	J-2
IC708	K-2
IC709	J-4
IC710	L-2
IC711	L-4
IC712	B-4
RV701	E-4
RV702	F-4
RV703	G-4
RV704	H-4
RV705	I-4
RV706	K-4
RV707	L-4
RV708	C-4
RV709	C-4
RV710	C-4

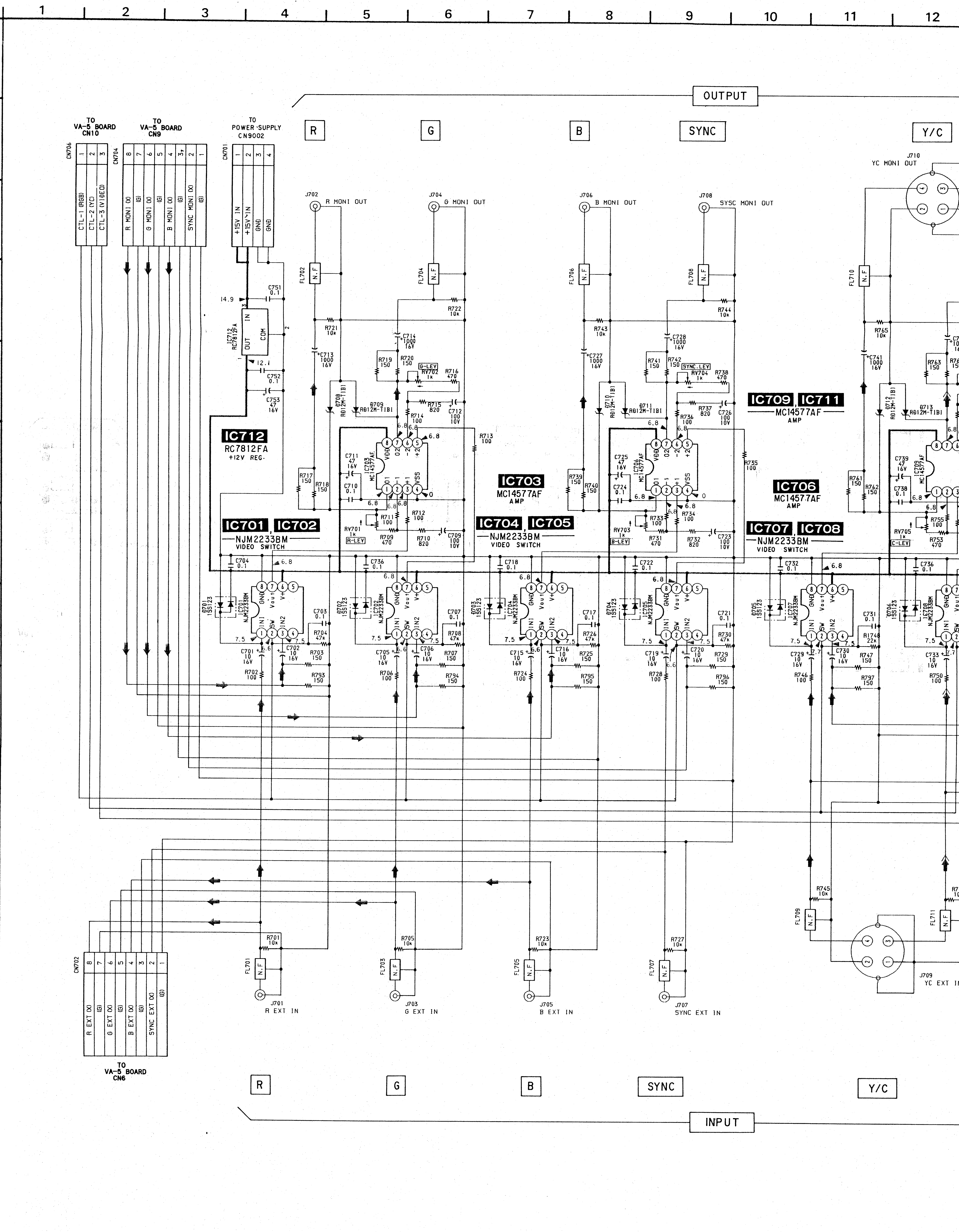


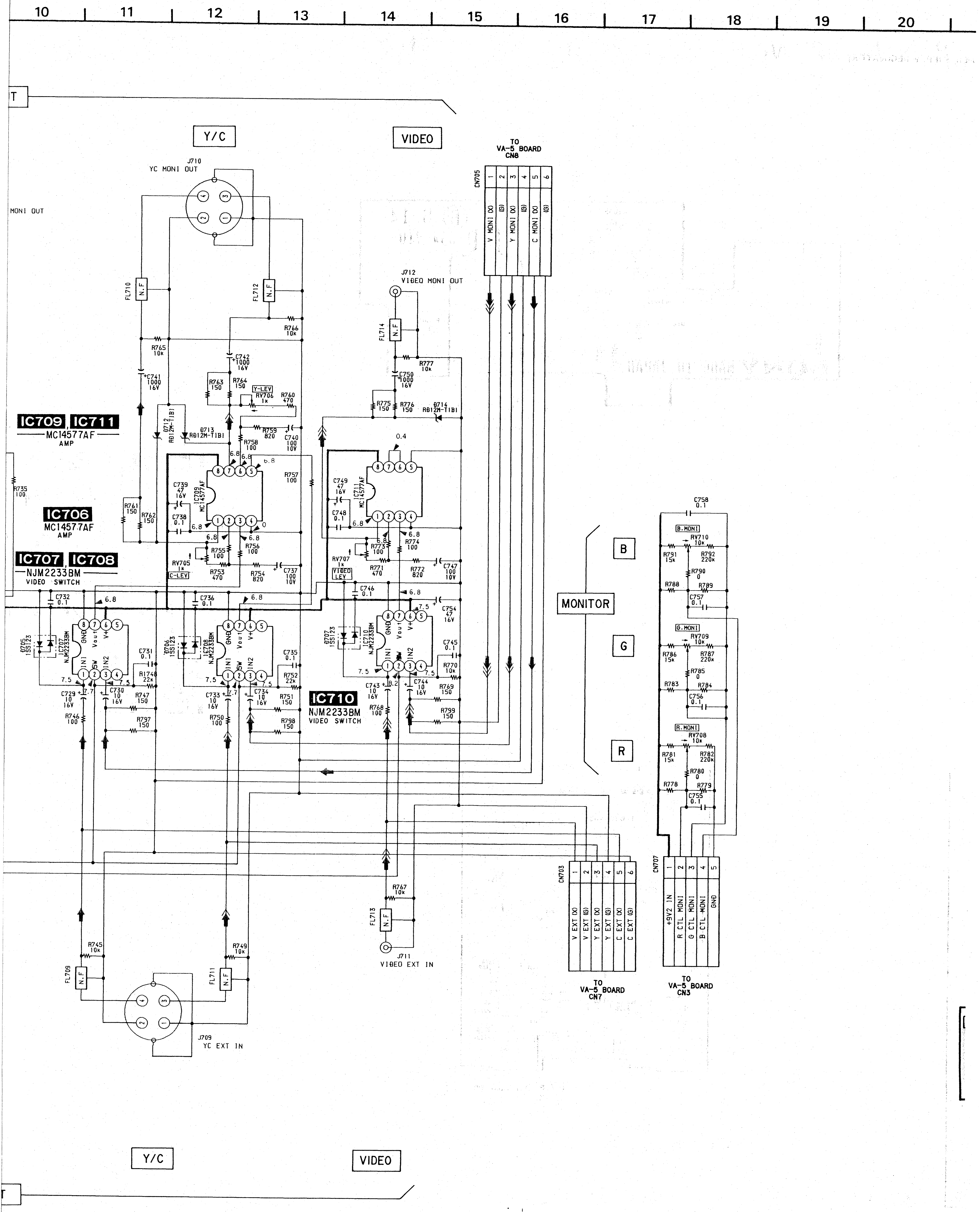
L
K
J
I
H
G
F
1
2
3
4
5
CN705
CN703
CN702
JW733
JW732
JW727
JW722
JW721
JW713
JW714
JW712
JW711
R767
R749
R745
R727
R723
R705
J711
J709
J707
J705
J703
JW741
JW734
JW736
JW708
JW742
D707
IC708
D706
R768
R750
D705
IC707
R746
D704
IC705
R728
D703
IC704
R724
D702
IC702
R706
D701
IC710
JW730
JW723
JW715
JW738
JW731
JW728
JW724
JW718
JW710
JW744
JW743
R774
C746
R799
R769
R770
C745
JW737
C736
R798
R751
R752
C735
JW729
R756
C732
R797
R747
R748
C731
JW726
JW725
C722
R796
R729
R730
C721
R734
JW720
C718
R795
R725
R726
C717
JW717
JW716
C708
R794
R707
R708
C707
C748
C738
IC709
R753
R755
R754
RV705
C-LEV
C724
R735
IC706
D710
JW719
R739
C710
R713
IC703
RV707
VIDEO LEV
R759
R760
R757
D712
R740
R733
D711
R773
R772
D714
IC711
R776
R764
R758
D713
RV704
SYNC LEV
R736
R737
RV703
B-LEV
RV702
G-LEV
R714
R715
R720
R716
R742
R741
R732
R731
R738
R763
RV706
Y-LEV
R762
R761
R765
R777
R775
R771
R766
R744
R743
R722
J712
J710
J708
J706
J704

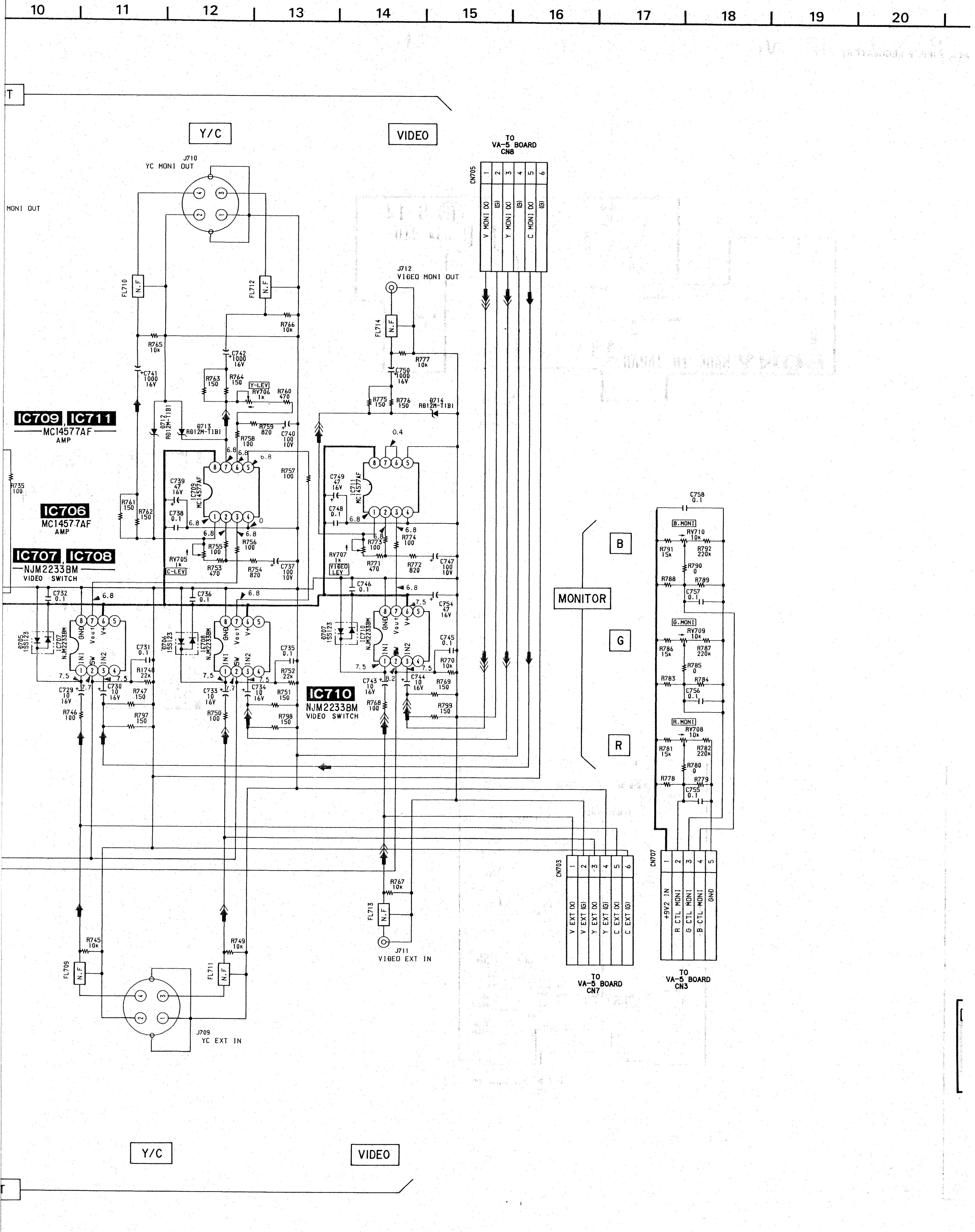

F
E
D
C
B
A
CN704
JW707
JW708
JW712
JW711
R705
R701
J703
J701
IC702
IC701
R706
D701
R702
JW709
JW703
JW710
JW704
JW717
JW716
C708
R794
R707
R708
C707
R712
JW706
C704
R793
R703
R704
C703
IC703
D708
JW705
C710
R713
R717
R718
RV702
G-LEV
RV701
R-LEV
R714
R715
R716
R720
R719
R710
R709
D709
R711
R722
R721
J704
J702
1
2
3
4
5
W706
W701
W707
C758
IC712
SONY
MADE IN JAPAN
B
RV710
B MONI
RV709
G MONI
RV708
R MONI
JW702
JW701
R792
R789
C757
R791
R790
R788
R784
R787
R786
C756
R785
R783
R779
R782
R781
C755
R780
R778
C752
C751
IF-13 1-634-727-

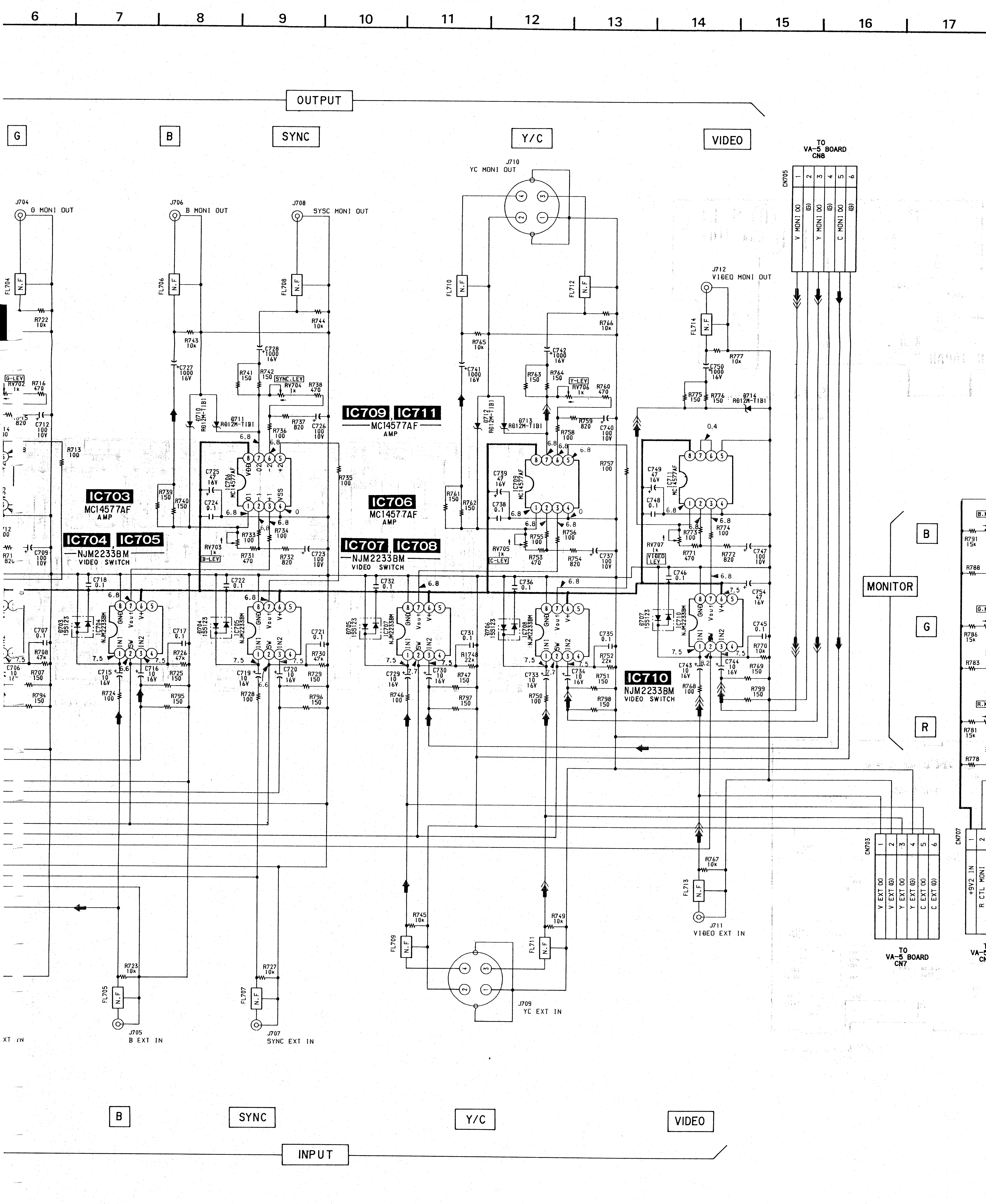
IF-13 —SOLDERING SIDE—
1-634-727-12
UP-3000P

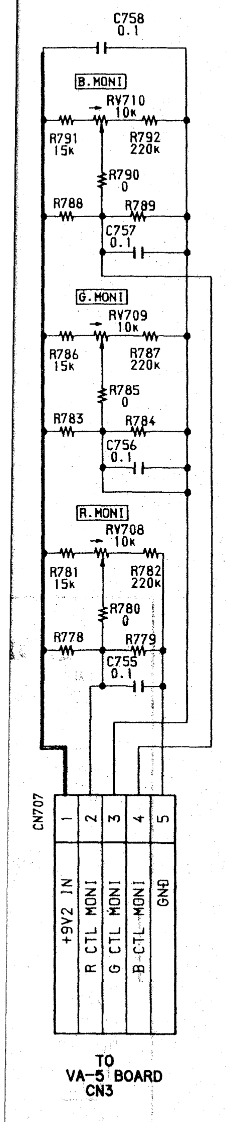
IF-13 (R · G · B ENCODER) DSC-4 (COLOR ADJUSTMENT)

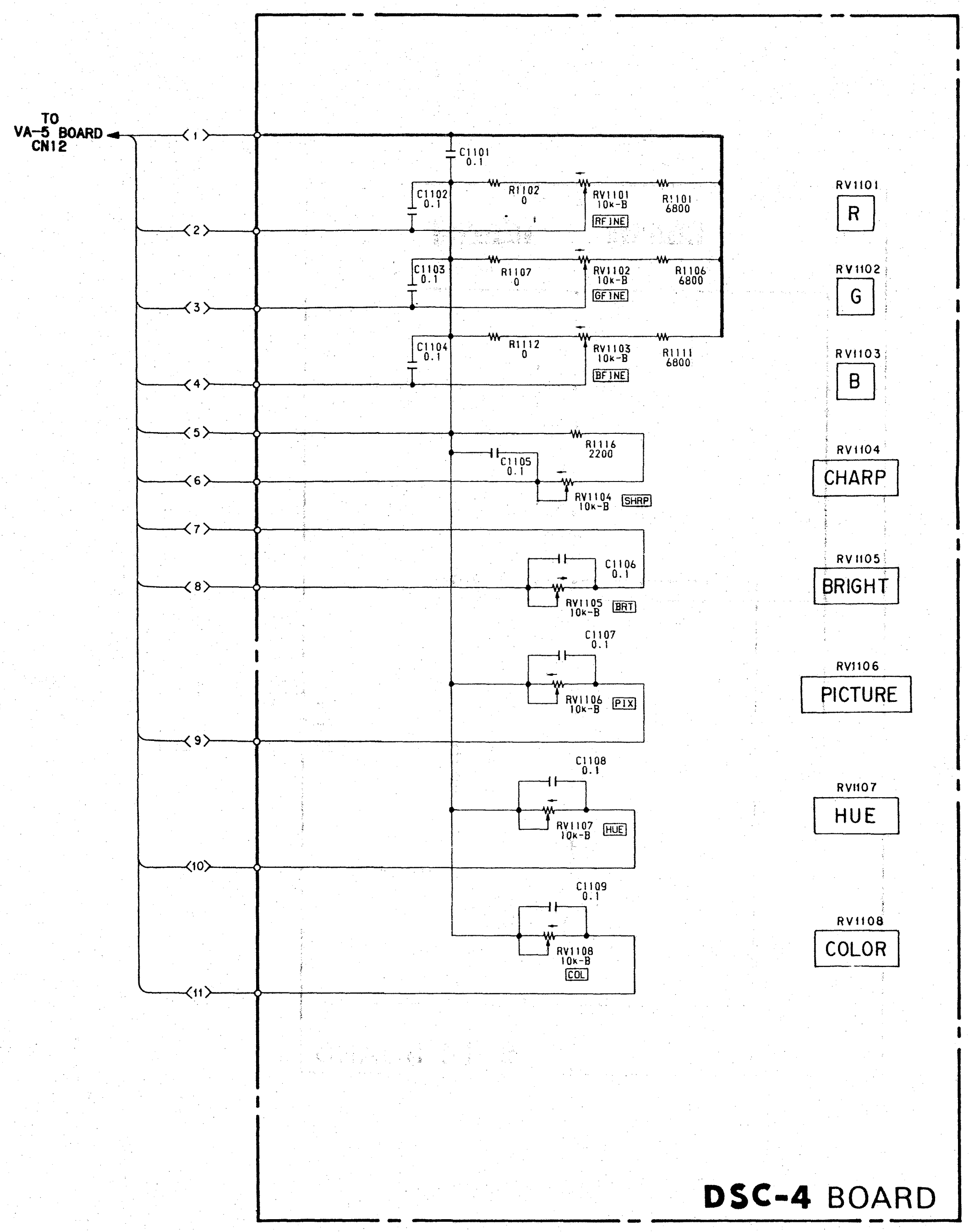

1
2
3
4
5
6
7
8
9
10
11
12
OUTPUT
R
G
B
SYNC
Y/C
TO VA-5 BOARD CN10
TO VA-5 BOARD CN9
TO POWER SUPPLY CN9002
CN706
CN704
CN701
CTL-1 (RGB)
CTL-2 (YC)
CTL-3 (VIDEO)
R MONI (X)
(G)
G MONI (X)
(G)
B MONI (X)
(G)
SYNC MONI (X)
(G)
+15V IN
+15V IN
GND
GND
J702 R MONI OUT
J704 G MONI OUT
J706 B MONI OUT
J708 SYSC MONI OUT
J710 YC MONI OUT
FL702
FL704
FL706
FL708
FL710
N.F
IC712
RC7812FA
+12V REG.
IN
OUT
COM
14.9
12.1
C751 0.1
C752 0.1
C753 47 16V
C713 1000 16V
C714 1000 16V
C727 1000 16V
C728 1000 16V
C741 1000 16V
R721 10k
R722 10k
R743 10k
R744 10k
R765 10k
R719 150
R720 150
G-LEV
RV702 1k
R716 470
R741 150
R742 150
SYNC.LEV
RV704 1k
R738 470
D708 RD12M-T1B1
D709 RD12M-T1B1
D710 RD12M-T1B1
D711 RD12M-T1B1
D712 RD12M-T1B1
D713 RD12M-T1B1
R715 820
R714 100
C712 100 10V
R737 820
R736 100
C726 100 10V
IC709, IC711
MC14577AF
AMP
IC703
MC14577AF
AMP
IC706
MC14577AF
AMP
VDD
O2
-2
+2
O1
-1
+1
VSS
6.8
0
C711 47 16V
C710 0.1
C725 47 16V
C724 0.1
C739 47 16V
C738 0.1
R717 150
R718 150
R739 150
R740 150
R761 150
R762 150
R713 100
R735 100
RV701 1k R-LEV
R711 100
R712 100
R709 470
R710 820
C709 100 10V
RV703 1k B-LEV
R733 100
R734 100
R731 470
R732 820
C723 100 10V
RV705 1k C-LEV
R755 100
R753 470
IC701, IC702
NJM2233BM
VIDEO SWITCH
IC704, IC705
NJM2233BM
VIDEO SWITCH
IC707, IC708
NJM2233BM
VIDEO SWITCH
C704 0.1
C736 0.1
C718 0.1
C722 0.1
C732 0.1
D701 1SS123
D702 1SS123
D703 1SS123
D704 1SS123
D705 1SS123
D706 1SS123
GND
Vout
V+
IN1
SW
IN2
7.5
C703 0.1
C707 0.1
C717 0.1
C721 0.1
C731 0.1
R704 47k
R708 47k
R726 47k
R730 47k
R1748 22k
C701 10 16V
C702 10 16V
C705 10 16V
C706 10 16V
C715 10 16V
C716 10 16V
C719 10 16V
C720 10 16V
C729 10 16V
C730 10 16V
C733 10 16V
R703 150
R707 150
R725 150
R729 150
R747 150
R702 100
R706 100
R724 100
R728 100
R746 100
R750 100
R793 150
R794 150
R795 150
R796 150
R797 150
R701 10k
R705 10k
R723 10k
R727 10k
R745 10k
FL701
FL703
FL705
FL707
FL709
FL711
J701 R EXT IN
J703 G EXT IN
J705 B EXT IN
J707 SYNC EXT IN
J709 YC EXT IN
CN702
R EXT (X)
(G)
G EXT (X)
(G)
B EXT (X)
(G)
SYNC EXT (X)
(G)
TO VA-5 BOARD CN6
INPUT

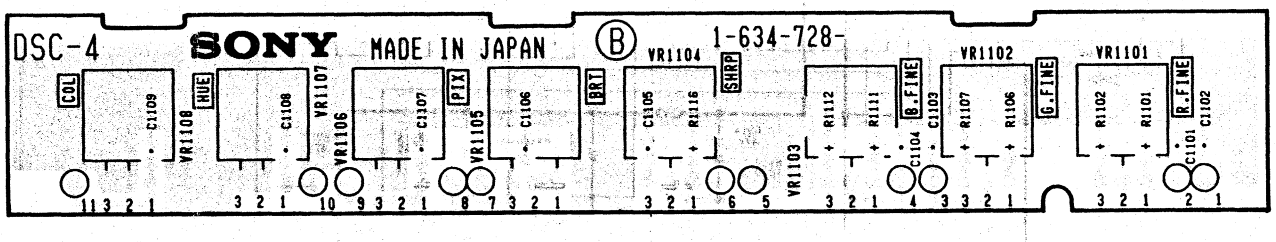

10
11
12
13
14
15
16
17
18
19
20
Y/C
VIDEO
J710
YC MONI OUT
MONI OUT
TO
VA-5 BOARD
CN8
CN705
V MONI (X)
(G)
Y MONI (X)
(G)
C MONI (X)
(G)
J712
VIDEO MONI OUT
FL710
FL712
FL714
N.F
R765 10k
R766 10k
C741 1000 16V
C742 1000 16V
R763 150
R764 150
Y-LEV
RV706 1k
R760 470
D712 RD12M-T1B1
D713 RD12M-T1B1
R759 820
C740 100 10V
R758 100
R757 100
C739 47 16V
IC709 MC14577AF
C738 0.1
R761 150
R762 150
R755 100
R756 100
RV705 1k
C-LEV
R753 470
R754 820
C737 100 10V
IC709, IC711
MC14577AF
AMP
IC706
MC14577AF
AMP
IC707, IC708
NJM2233BM
VIDEO SWITCH
R735 100
C777 10k
R777 10k
C750 1000 16V
R775 150
R776 150
D714 RD12M-T1B1
0.4
C749 47 16V
IC711 MC14577AF
C748 0.1
R773 100
R774 100
RV707 1k
VIDEO LEV
R771 470
R772 820
C747 100 10V
C746 0.1
C754 47 16V
C732 0.1
C736 0.1
D705 1SS123
IC707 NJM2233BM
D706 1SS123
IC708 NJM2233BM
D707 1SS123
IC710 NJM2233BM
GND
Vout
V+
IN1
SW
IN2
C731 0.1
R1748 22k
C735 0.1
R752 22k
C745 0.1
R770 10k
C729 10 16V
C730 10 16V
R747 150
C733 10 16V
C734 10 16V
R751 150
C743 10 16V
C744 10 16V
R769 150
R746 100
R797 150
R750 100
R798 150
R768 100
R799 150
IC710
NJM2233BM
VIDEO SWITCH
6.8
7.5
8.2
7.7
0
MONITOR
B
G
R
C758 0.1
B.MONI
RV710 10k
R791 15k
R792 220k
R790 0
R788
R789
C757 0.1
G.MONI
RV709 10k
R786 15k
R787 220k
R785 0
R783
R784
C756 0.1
R.MONI
RV708 10k
R781 15k
R782 220k
R780 0
R778
R779
C755 0.1
CN703
V EXT (X)
V EXT (G)
Y EXT (X)
Y EXT (G)
C EXT (X)
C EXT (G)
TO
VA-5 BOARD
CN7
CN707
+9V2 IN
R CTL MONI
G CTL MONI
B CTL MONI
GND
TO
VA-5 BOARD
CN3
R767 10k
FL713
J711
VIDEO EXT IN
R745 10k
R749 10k
FL709
FL711
J709
YC EXT IN
T


10
11
12
13
14
15
16
17
18
19
20
Y/C
VIDEO
J710
YC MONI OUT
MONI OUT
TO
VA-5 BOARD
CN8
CN705
V MONI (X)
(G)
Y MONI (X)
(G)
C MONI (X)
(G)
J712
VIDEO MONI OUT
FL710
FL712
FL714
N.F
R766 10k
R765 10k
R777 10k
C742 1000 16V
C741 1000 16V
C750 1000 16V
R763 150
R764 150
Y-LEV
RV706 1k
R760 470
R775 150
R776 150
D714 RD12M-T1B1
D712 RD12M-T1B1
D713 RD12M-T1B1
R759 820
C740 100 10V
R758 100
IC709, IC711
MC14577AF
AMP
IC706
MC14577AF
AMP
IC707, IC708
NJM2233BM
VIDEO SWITCH
R735 100
R757 100
C739 47 16V
IC709 MC14577AF
C738 0.1
R761 150
R762 150
R755 100
R756 100
RV705 1k
C-LEV
R753 470
R754 820
C737 100 10V
C749 47 16V
IC711 MC14577AF
C748 0.1
R773 100
R774 100
RV707 1k
VIDEO LEV
R771 470
R772 820
C747 100 10V
C746 0.1
C754 47 16V
C745 0.1
R770 10k
R769 150
R799 150
C744 10 16V
C743 10 16V
R768 100
IC710
NJM2233BM
VIDEO SWITCH
D707 1SS123
IC710 NJM2233BM
C732 0.1
C736 0.1
D705 1SS123
IC707 NJM2233BM
D706 1SS123
IC708 NJM2233BM
C731 0.1
R1748 22k
C735 0.1
R752 22k
C729 10 16V
C730 10 16V
R747 150
C733 10 16V
C734 10 16V
R751 150
R746 100
R797 150
R750 100
R798 150
GND
Vout
V+
IN1
SW
IN2
6.8
7.5
7.7
8.2
0.4
0
C758 0.1
B.MONI
RV710 10k
R791 15k
R792 220k
R790 0
R788
R789
C757 0.1
G.MONI
RV709 10k
R786 15k
R787 220k
R785 0
R783
R784
C756 0.1
R.MONI
RV708 10k
R781 15k
R782 220k
R780 0
R778
R779
C755 0.1
B
G
R
MONITOR
CN703
V EXT (X)
V EXT (G)
Y EXT (X)
Y EXT (G)
C EXT (X)
C EXT (G)
TO
VA-5 BOARD
CN7
CN707
+9V2 IN
R CTL MONI
G CTL MONI
B CTL MONI
GND
TO
VA-5 BOARD
CN3
R767 10k
FL713
J711
VIDEO EXT IN
R745 10k
R749 10k
FL709
FL711
J709
YC EXT IN
Y/C
VIDEO


6
7
8
9
10
11
12
13
14
15
16
17
OUTPUT
G
B
SYNC
Y/C
VIDEO
J704 G MONI OUT
J706 B MONI OUT
J708 SYSC MONI OUT
J710 YC MONI OUT
J712 VIDEO MONI OUT
TO VA-5 BOARD CN8
CN705
V MONI (X)
(G)
Y MONI (X)
(G)
C MONI (X)
(G)
FL704
FL706
FL708
FL710
FL712
FL714
N.F
R722 10k
R743 10k
R744 10k
R765 10k
R766 10k
R777 10k
C727 1000 16V
C728 1000 16V
C741 1000 16V
C742 1000 16V
C750 1000 16V
G-LEV RV702 1k
R716 470
B-LEV RV703 1k
SYNC.LEV RV704 1k
Y-LEV RV706 1k
C-LEV RV705 1k
VIDEO LEV RV707 1k
R741 150
R742 150
R738 470
R763 150
R764 150
R760 470
R775 150
R776 150
D710 RD12M-T1B1
D711 RD12M-T1B1
D712 RD12M-T1B1
D713 RD12M-T1B1
D714 RD12M-T1B1
R737 820
C726 100 10V
R759 820
C740 100 10V
R736 100
R758 100
R713 100
C712 100 10V
IC709, IC711
MC14577AF
AMP
IC703
MC14577AF
AMP
IC706
MC14577AF
AMP
IC704, IC705
NJM2233BM
VIDEO SWITCH
IC707, IC708
NJM2233BM
VIDEO SWITCH
IC710
NJM2233BM
VIDEO SWITCH
IC706 MC14577AF
IC709 MC14577AF
IC711 MC14577AF
C725 47 16V
C739 47 16V
C749 47 16V
C724 0.1
C738 0.1
C748 0.1
R739 150
R740 150
R761 150
R762 150
R735 100
R757 100
R733 100
R734 100
R755 100
R756 100
R773 100
R774 100
R731 470
R732 820
R753 470
R754 820
R771 470
R772 820
C709 100 10V
C723 100 10V
C737 100 10V
C747 100 10V
C718 0.1
C722 0.1
C732 0.1
C736 0.1
C746 0.1
D703 1SS123
D704 1SS123
D705 1SS123
D706 1SS123
D707 1SS123
IC704 NJM2233BM
IC705 NJM2233BM
IC707 NJM2233BM
IC708 NJM2233BM
IC710 NJM2233BM
GND
Vout
V+
IN1
SW
IN2
VDD
VSS
6.8
7.5
6.6
7.7
8.2
0.4
C707 0.1
C717 0.1
C721 0.1
C731 0.1
C735 0.1
C745 0.1
C754 47 16V
R708 47k
R726 47k
R730 47k
R1748 22k
R752 22k
R770 10k
C715 10 16V
C716 10 16V
C719 10 16V
C720 10 16V
C729 10 16V
C730 10 16V
C733 10 16V
C734 10 16V
C743 10 16V
C744 10 16V
C706 10 16V
R707 150
R725 150
R729 150
R747 150
R751 150
R769 150
R724 100
R728 100
R746 100
R750 100
R768 100
R794 150
R795 150
R796 150
R797 150
R798 150
R799 150
R723 10k
R727 10k
R745 10k
R749 10k
R767 10k
FL705
FL707
FL709
FL711
FL713
J705 B EXT IN
J707 SYNC EXT IN
J709 YC EXT IN
J711 VIDEO EXT IN
XT IN
CN703
V EXT (X)
V EXT (G)
Y EXT (X)
Y EXT (G)
C EXT (X)
C EXT (G)
TO VA-5 BOARD CN7
CN707
+9V2 IN
R CTL MONI
MONITOR
B
G
R
R791 15k
R788
R786 15k
R783
R781 15k
R778
INPUT
B
SYNC
Y/C
VIDEO


C758
0.1
B.MONI
RV710
10k
R791
15k
R792
220k
R790
0
R788
R789
C757
0.1
G.MONI
RV709
10k
R786
15k
R787
220k
R785
0
R783
R784
C756
0.1
R.MONI
RV708
10k
R781
15k
R782
220k
R780
0
R778
R779
C755
0.1
CN707
1
2
3
4
5
+9V2 IN
R CTL MONI
G CTL MONI
B CTL MONI
GND
TO
VA-5 BOARD
CN3

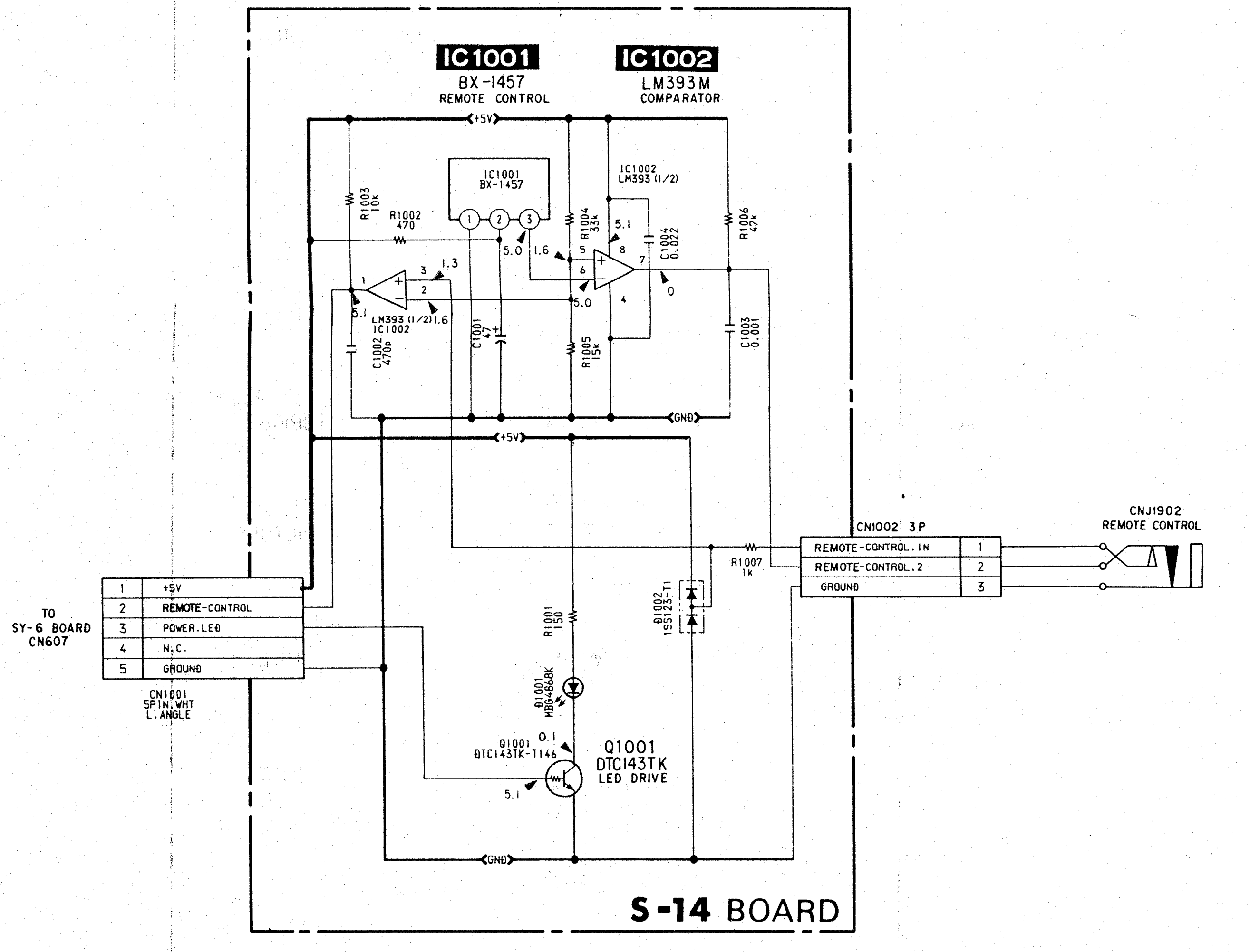

TO
VA-5 BOARD
CN12
1
2
3
4
5
6
7
8
9
10
11
C1101
0.1
C1102
0.1
R1102
0
RV1101
10k-B
RFINE
R1101
6800
C1103
0.1
R1107
0
RV1102
10k-B
GFINE
R1106
6800
C1104
0.1
R1112
0
RV1103
10k-B
BFINE
R1111
6800
R1116
2200
C1105
0.1
RV1104
10k-B
SHRP
C1106
0.1
RV1105
10k-B
BRT
C1107
0.1
RV1106
10k-B
PIX
C1108
0.1
RV1107
10k-B
HUE
C1109
0.1
RV1108
10k-B
COL
RV1101
R
RV1102
G
RV1103
B
RV1104
CHARP
RV1105
BRIGHT
RV1106
PICTURE
RV1107
HUE
RV1108
COLOR
DSC-4 BOARD

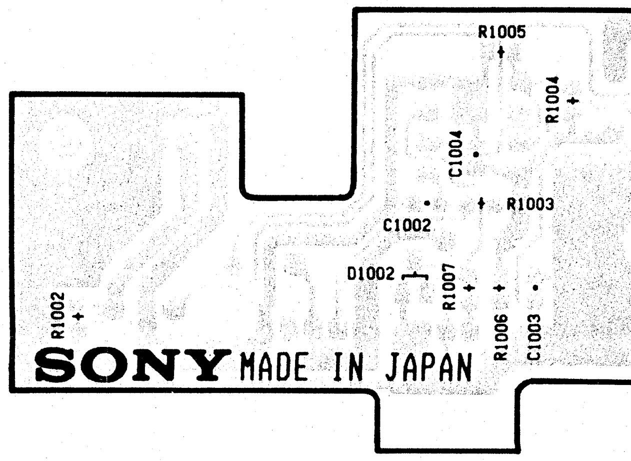

DSC-4
SONY
MADE IN JAPAN
B
1-634-728-
COL
C1109
VR1108
HUE
C1108
VR1107
VR1106
C1107
PIX
VR1105
C1106
BRT
C1105
R1116
VR1104
SHRP
VR1103
R1112
R1111
B.FINE
C1104
C1103
VR1102
R1107
R1106
G.FINE
VR1101
R1102
R1101
R.FINE
C1101
C1102
11 3 2 1
3 2 1
10
9 3 2 1
8 7 3 2 1
3 2 1
6 5
3 2 1
4
3 3 2 1
3 2 1
2 1

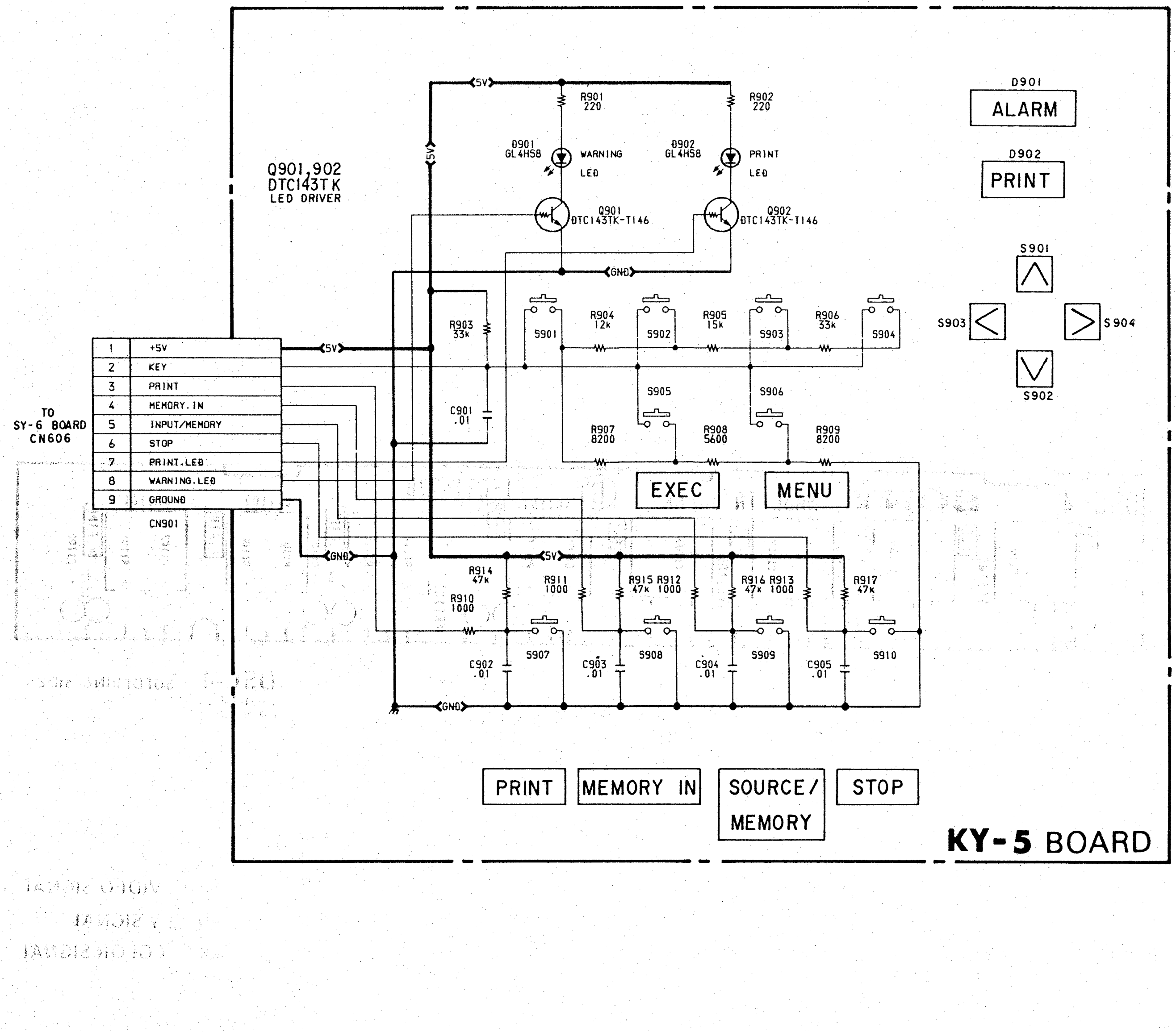
DSC-4 —SOLDERING SIDE—
1-634-728-12
UP-3000P

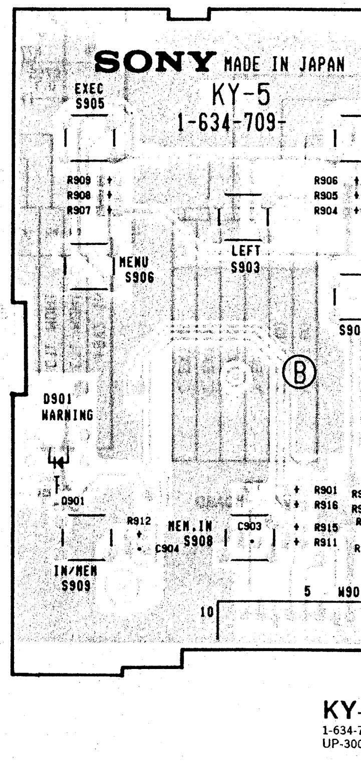
➡ : VIDEO SIGNAL
➡ : Y SIGNAL
➡ : COLOR SIGNAL

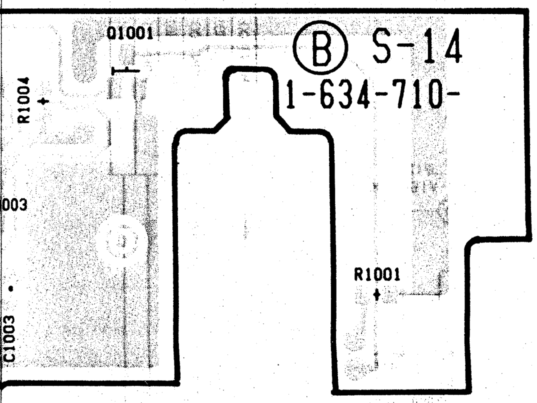
S-14 (REMOTE CONTROL) KY-5 (FUNCTION SWITCH) SW REG-A & B (POWER SUPPLY REGULATOR)


IC1001
BX-1457
REMOTE CONTROL
IC1002
LM393M
COMPARATOR
+5V
R1003 10k
R1002 470
R1004 33k
R1006 47k
C1004 0.022
C1002 470p
C1001 47
R1005 15k
C1003 0.001
LM393 (1/2) IC1002
GND
CN1002 3P
REMOTE-CONTROL.IN
REMOTE-CONTROL.2
GROUND
R1007 1k
CNJ1902
REMOTE CONTROL
D1002 1SS133-T1
R1001 150
D1001 MBG4868K
Q1001 DTC143TK-T146
Q1001
DTC143TK
LED DRIVE
TO SY-6 BOARD CN607
+5V
REMOTE-CONTROL
POWER.LED
N.C.
GROUND
CN1001 5PIN.WHT L.ANGLE
S-14 BOARD

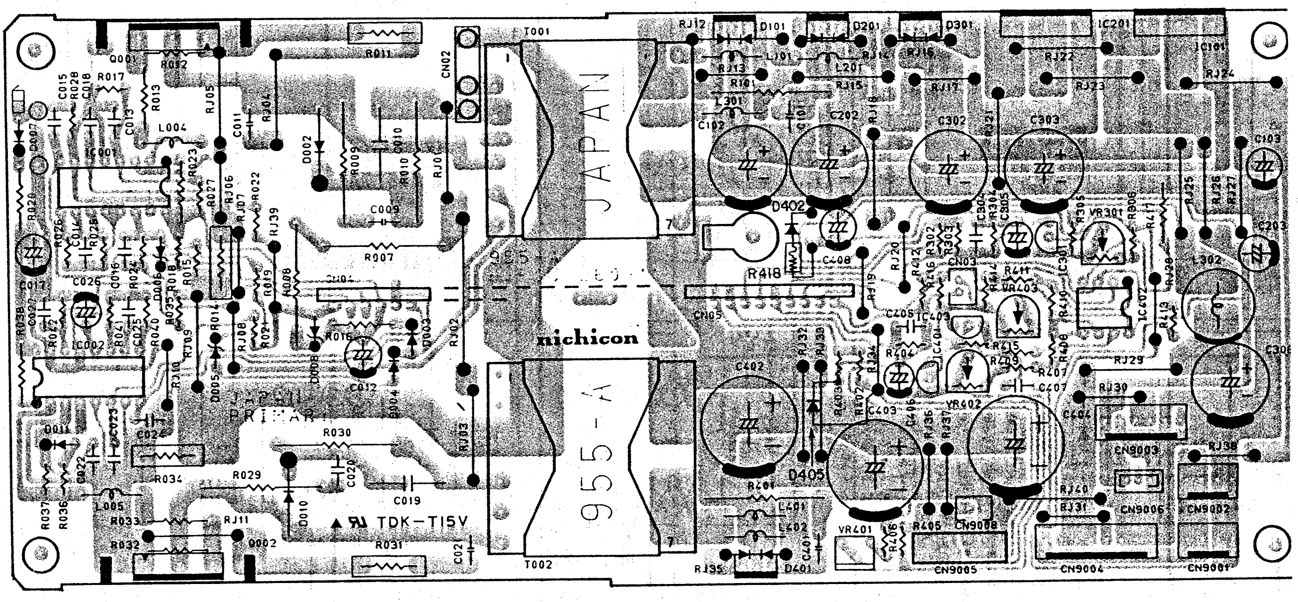

R1005
R1004
C1004
R1003
C1002
D1002
R1007
R1002
R1006
C1003
SONY MADE IN JAPAN


5V
R901 220
R902 220
D901 GL4HS8
WARNING LED
D902 GL4HS8
PRINT LED
Q901,902
DTC143TK
LED DRIVER
Q901 DTC143TK-T146
Q902 DTC143TK-T146
D901
ALARM
D902
PRINT
GND
R903 33k
R904 12k
R905 15k
R906 33k
S901
S902
S903
S904
S905
S906
C901 .01
R907 8200
R908 5600
R909 8200
EXEC
MENU
TO SY-6 BOARD CN606
+5V
KEY
PRINT
MEMORY.IN
INPUT/MEMORY
STOP
PRINT.LED
WARNING.LED
GROUND
CN901
R914 47k
R910 1000
R911 1000
R915 47k
R912 1000
R916 47k
R913 1000
R917 47k
S907
S908
S909
S910
C902 .01
C903 .01
C904 .01
C905 .01
PRINT
MEMORY IN
SOURCE/ MEMORY
STOP
KY-5 BOARD

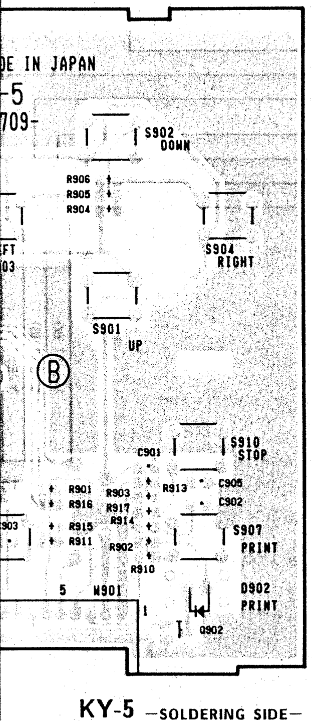

SONY MADE IN JAPAN
KY-5
1-634-709-
EXEC S905
MENU S906
LEFT S903
D901 WARNING
MEM.IN S908
IN/MEM S909
KY-
1-634-
UP-300


Q1001
B S-14
1-634-710-
R1004
003
R1001
C1003

S-14 —SOLDERING SIDE—
1-634-710-12
UP-3000P

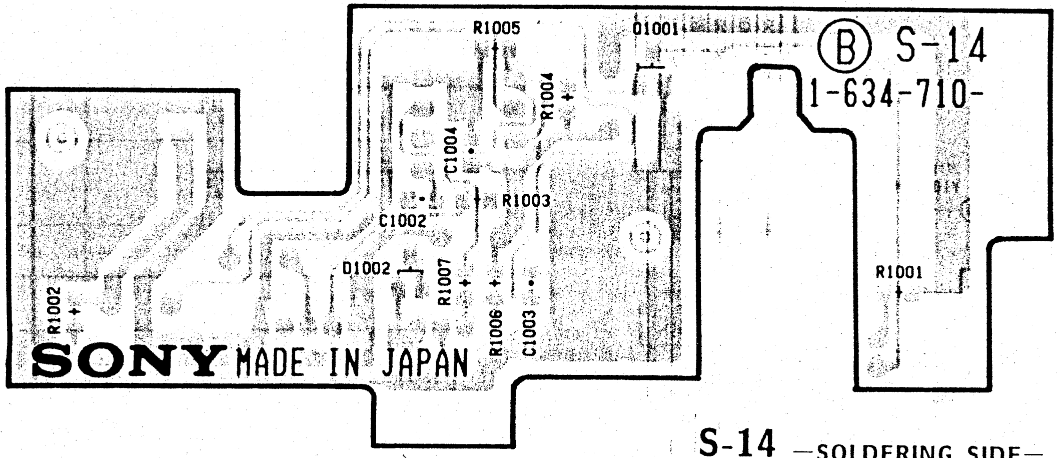

T001
T002
JAPAN
955-A
nichicon
TDK-T15V
PRIMARY
IC001
IC201
IC101
D402
D405
R418
VR301
VR401
VR402
CN9001
CN9002
CN9003
CN9004
CN9005
CN9006
CN9008
CN02
CN03
L004
L302
Q001
Q002

SW REG-A —SOLDERING SIDE
1-413-580-11
UP-3000P

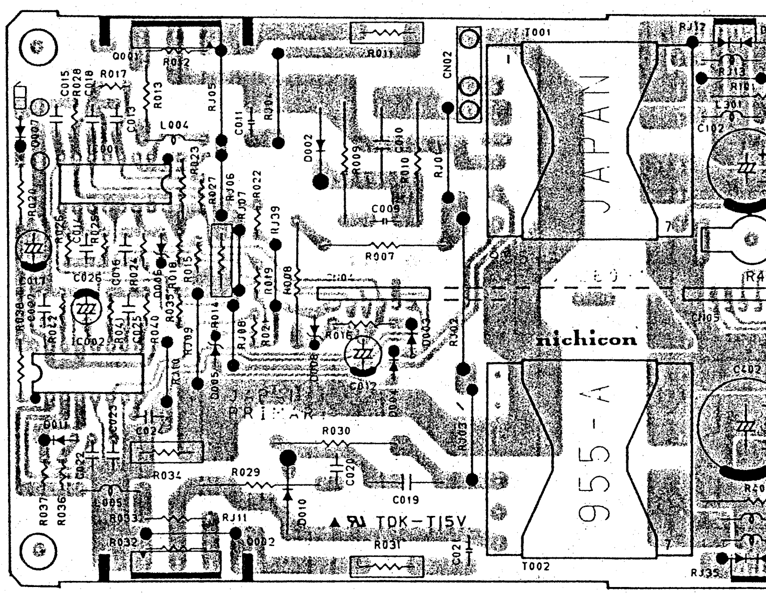

DE IN JAPAN
-5
709-
S902
DOWN
R906
R905
R904
S904
RIGHT
FT
03
S901
UP
B
C901
S910
STOP
R901
R916
R915
R911
R903
R917
R914
R902
R910
R913
C905
C902
S907
PRINT
5
W901
1
D902
PRINT
Q902

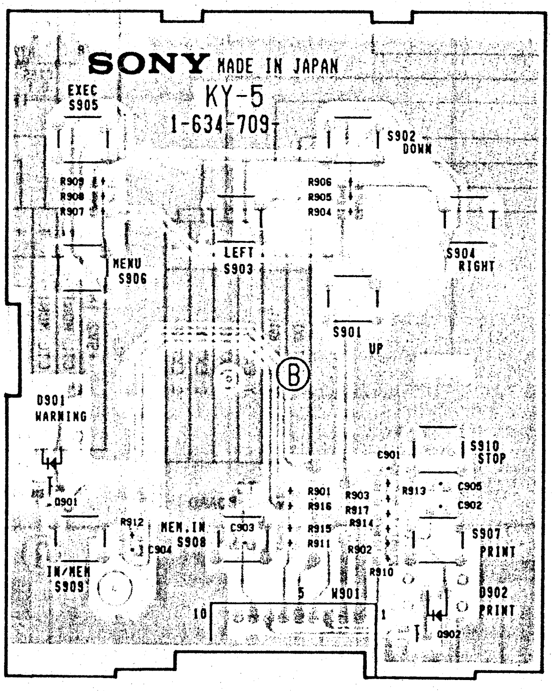
KY-5 —SOLDERING SIDE—
1-634-709-12
UP-3000P

PPLY REGULATOR)

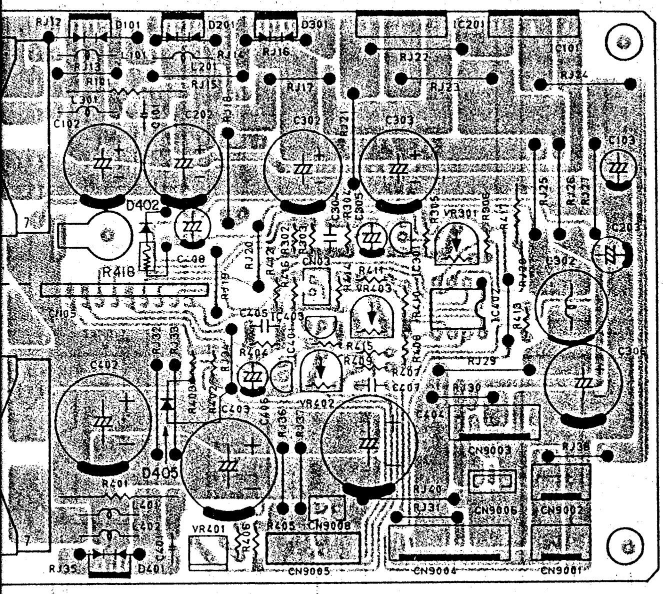

R1005
D1001
B
S-14
1-634-710-
C1004
R1004
R1003
C1002
D1002
R1007
R1006
C1003
R1001
R1002
SONY MADE IN JAPAN

S-14 —SOLDERING SIDE—
1-634-710-12
UP-3000P

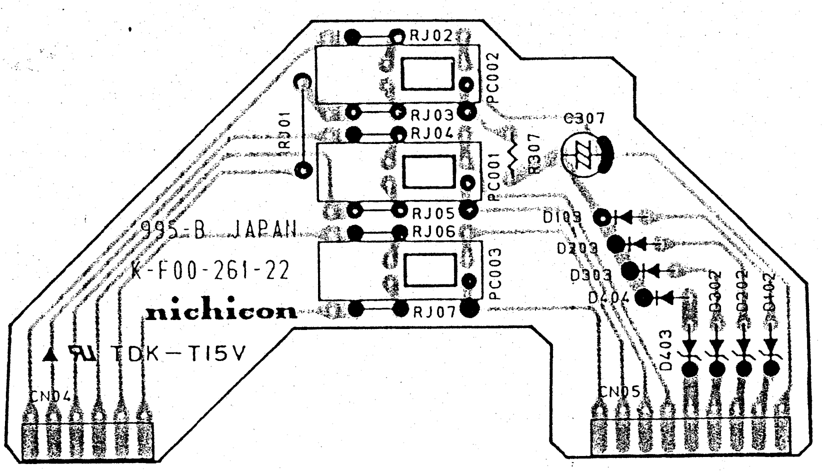

T001
CN02
JAPAN
nichicon
955-A
TDK-T15V
T002
R029
R030
R034
C019


SONY MADE IN JAPAN
KY-5
1-634-709
EXEC
S905
S902
DOWN
R909
R908
R907
R906
R905
R904
MENU
S906
LEFT
S903
S904
RIGHT
S901
UP
B
D901
WARNING
C901
S910
STOP
R912
MEM.IN
S908
C903
C904
R901
R916
R915
R911
R903
R917
R914
R902
R913
C905
C902
S907
PRINT
R910
CN901
D902
PRINT
IN/MEM
S909

KY-5 —SOLDERING SIDE—
1-634-709-12
UP-3000P

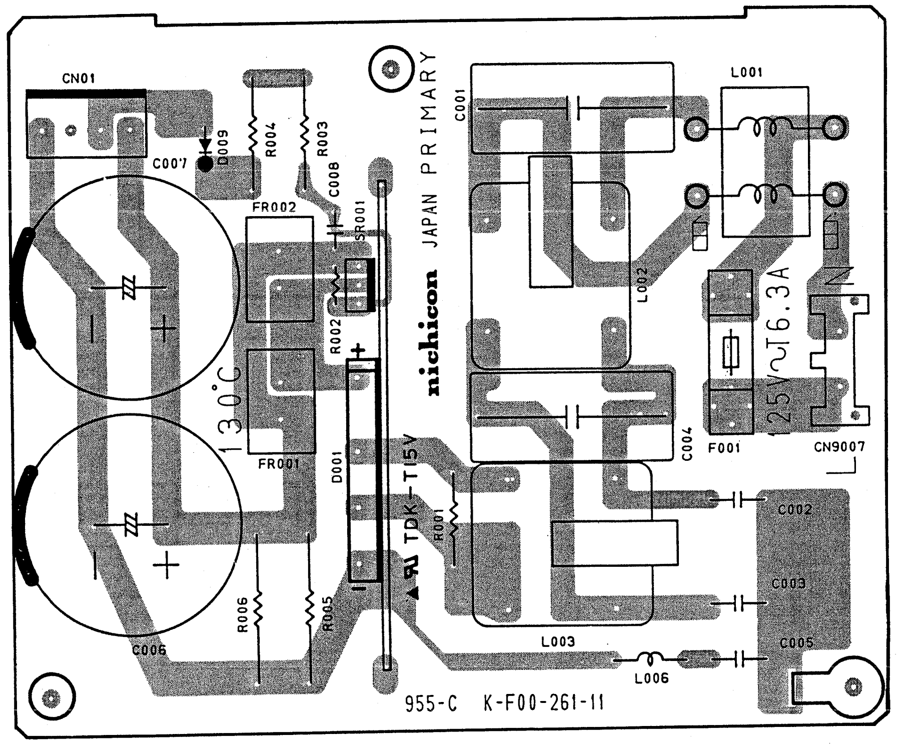

RJ17
D101
D201
D301
IC201
C101
RJ16
RJ22
RJ23
RJ24
R101
L201
C102
C202
C302
C303
C103
D402
R418
RJ25
RJ26
R327
C502
VR401
RJ29
RJ30
CN9003
CN9002
CN9006
RJ40
RJ31
RJ38
D405
D401
VR201
R405
CN9008
CN9005
CN9004
CN9001
RJ35

SW REG-A –SOLDERING SIDE–
1-413-580-11
UP-3000P


RJ02
PC002
RJ03
RJ04
C307
RJ01
RC001
R307
RJ05
RJ06
D103
995-B JAPAN
D203
K-F00-261-22
D303
PC003
D404
nichicon
RJ07
D302
D202
D102
TDK-T15V
D403
CN04
CN05

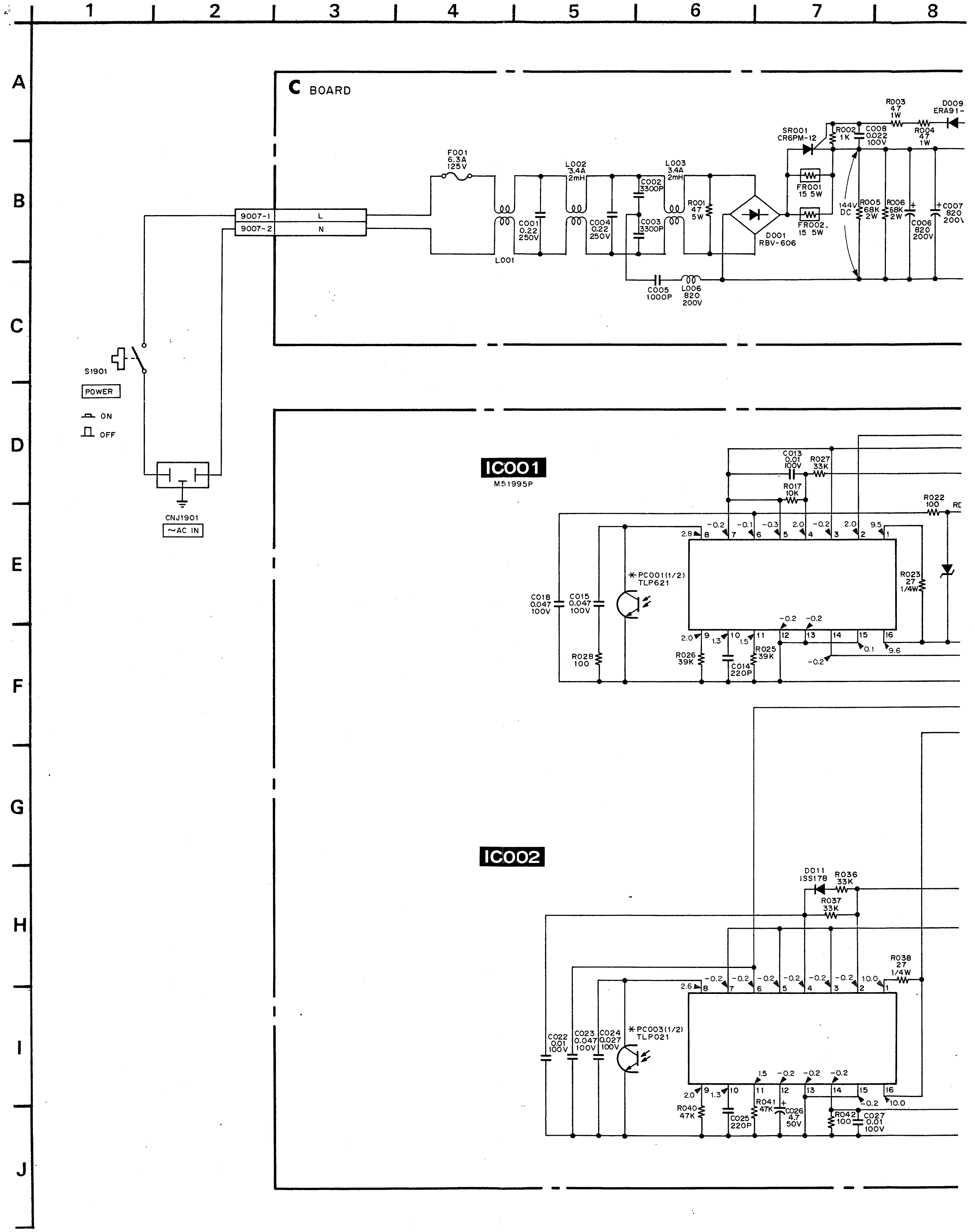
SW REG-B –SOLDERING SIDE–
1-413-580-11
UP-3000P

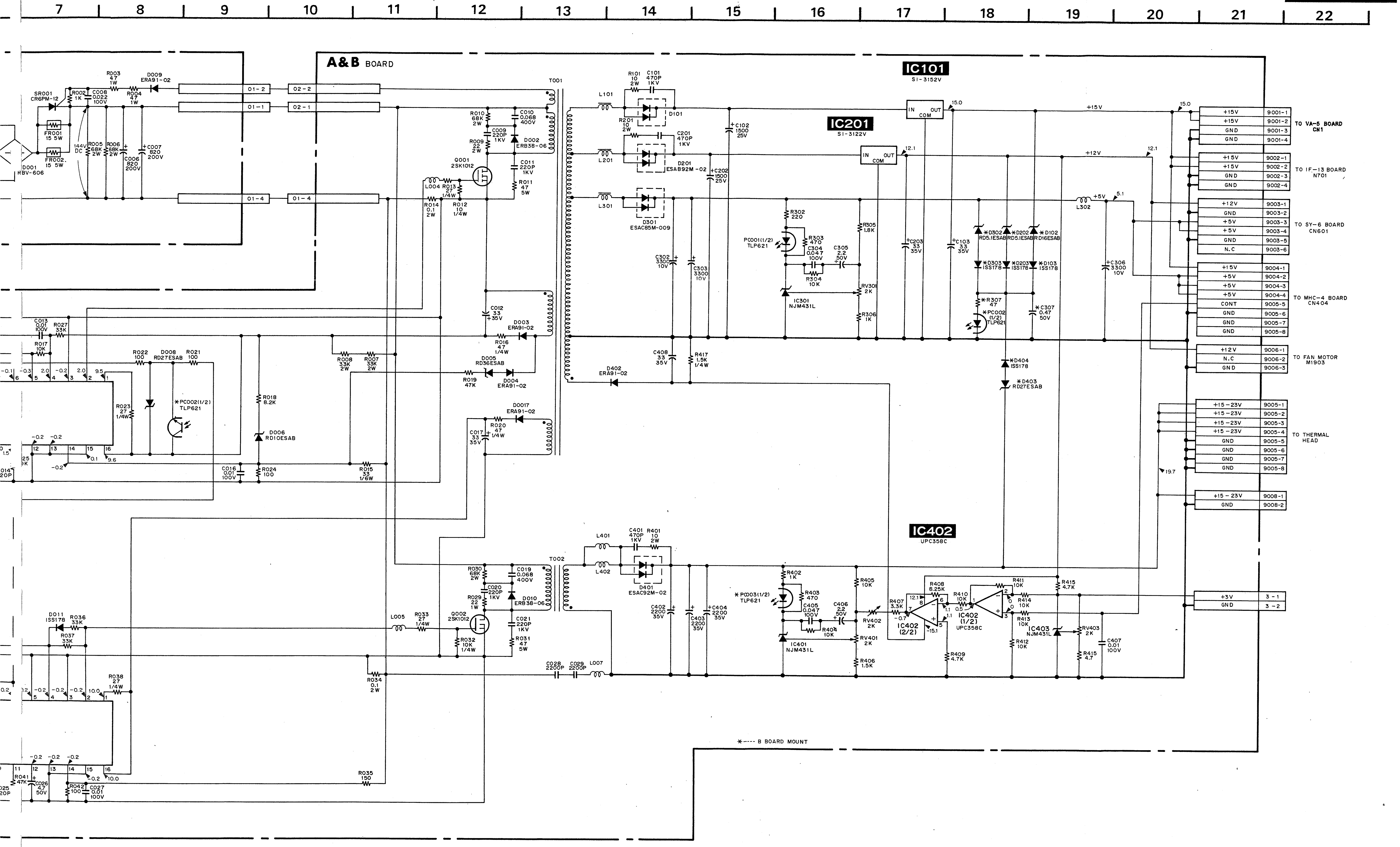
SW REG-C (INPUT SELECT)


CN01
C007
D009
R004
R003
C008
SR001
FR002
R002
FR001
D001
R001
R006
R005
C006
130°C
nichicon JAPAN PRIMARY
TDK-T15V
C001
L001
L002
C004
F001
25V T6.3A
CN9007
C002
C003
C005
L003
L006
955-C K-F00-261-11

SW REG-C —SOLDERING SIDE—
1-413-580-11
UP-3000P

SW REG-A & B (POWER SUPPLY REGULATOR)


1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
H
I
J
C BOARD
9007-1
9007-2
L
N
F001 6.3A 125V
L001
C001 0.22 250V
L002 3.4A 2mH
C004 0.22 250V
C002 3300P
C003 3300P
L003 3.4A 2mH
R001 47 5W
D001 RBV-606
SR001 CR6PM-12
R002 1K
C008 0.022 100V
R003 47 1W
R004 47 1W
D009 ERA91-
FR001 15 5W
FR002 15 5W
144V DC
R005 68K 2W
R006 68K 2W
C006 820 200V
C007 820 200V
C005 1000P
L006 820 200V
S1901
POWER
ON
OFF
CNJ1901
~AC IN
IC001
M51995P
C013 0.01 100V
R027 33K
R017 10K
R022 100
R023 27 1/4W
PC001(1/2) TLP621
C018 0.047 100V
C015 0.047 100V
R028 100
R026 39K
C014 220P
R025 39K
IC002
D011 1SS178
R036 33K
R037 33K
R038 27 1/4W
PC003(1/2) TLP621
C022 0.01 100V
C023 0.047 100V
C024 0.027 100V
R040 47K
C025 220P
R041 47K
C026 47 50V
R042 100
C027 0.01 100V

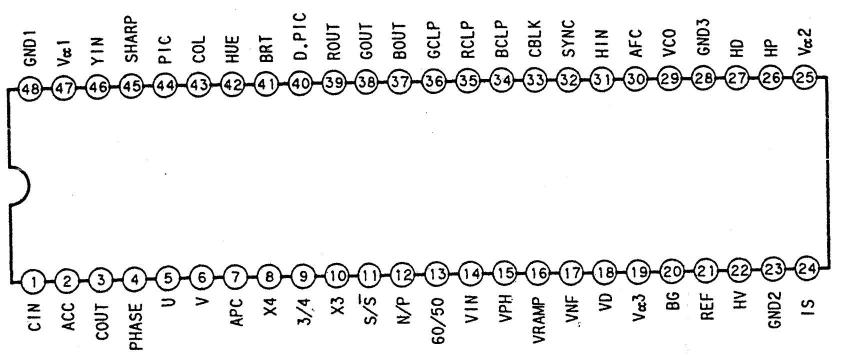

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
A&B BOARD
IC101
SI-3152V
IC201
SI-3122V
IC402
UPC358C
T001
T002
SR001 CRGPM-12
R002 1K
R003 47 1W
R004 47 1W
D009 ERA91-02
C008 0.022 100V
FR001 15 5W
FR002 15 5W
144V DC
R005 68K 2W
R006 68K 2W
C006 820 200V
C007 820 200V
D001 RBV-606
01-2
01-1
01-4
02-2
02-1
01-4
R010 68K 2W
C010 0.068 400V
C009 220P 1KV
R009 22 2W
D002 ERB38-06
Q001 2SK1012
C011 220P 1KV
R011 47 5W
L004
R013 27 1/4W
R014 0.1 2W
R012 10 1/4W
C012 33 35V
D003 ERA91-02
R016 47 1/4W
D005 RD36ESAB
R019 47K
D004 ERA91-02
D0017 ERA91-02
R020 47 1/4W
C017 33 35V
C013 0.01 100V
R027 33K
R017 10K
R022 100
D008 RD27ESAB
R021 100
R023 27 1/4W
*PC002(1/2) TLP621
R018 8.2K
D006 RD10ESAB
C016 0.01 100V
R024 100
R015 33 1/6W
R008 33K 2W
R007 33K 2W
R101 10 2W
C101 470P 1KV
L101
D101
R201 10 2W
C201 470P 1KV
L201
D201 ESAB92M-02
L301
D301 ESAC85M-009
C102 1500 25V
C202 1500 25V
C302 3300 10V
C303 3300 10V
C408 33 35V
R417 1.5K 1/4W
D402 ERA91-02
R302 220
PC001(1/2) TLP621
R303 470
C304 0.047 100V
C305 2.2 50V
R304 10K
IC301 NJM431L
R305 1.8K
RV301 2K
R306 1K
IN OUT COM
15.0
12.1
+15V
+12V
+5V
5.1
L302
C203 33 35V
C103 33 35V
*D302 RD5.1ESAB
*D202 RD5.1ESAB
*D102 RD16ESAB
*D303 1SS178
*D203 1SS178
*D103 1SS178
*R307 47
*PC002 (1/2) TLP621
*C307 0.47 50V
C306 3300 10V
*D404 1SS178
*D403 RD27ESAB
19.7
+15V | 9001-1
+15V | 9001-2
GND | 9001-3
GND | 9001-4
TO VA-5 BOARD CN1
+15V | 9002-1
+15V | 9002-2
GND | 9002-3
GND | 9002-4
TO IF-13 BOARD N701
+12V | 9003-1
GND | 9003-2
+5V | 9003-3
+5V | 9003-4
GND | 9003-5
N.C | 9003-6
TO SY-6 BOARD CN601
+15V | 9004-1
+5V | 9004-2
+5V | 9004-3
+5V | 9004-4
CONT | 9005-5
GND | 9005-6
GND | 9005-7
GND | 9005-8
TO MHC-4 BOARD CN404
+12V | 9006-1
N.C | 9006-2
GND | 9006-3
TO FAN MOTOR M1903
+15-23V | 9005-1
+15-23V | 9005-2
+15-23V | 9005-3
+15-23V | 9005-4
GND | 9005-5
GND | 9005-6
GND | 9005-7
GND | 9005-8
TO THERMAL HEAD
+15-23V | 9008-1
GND | 9008-2
+3V | 3-1
GND | 3-2
R030 68K 2W
C019 0.068 400V
C020 220P 1KV
R029 22 1W
D010 ERB38-06
Q002 2SK1012
C021 220P 1KV
R031 47 5W
R032 10K 1/4W
L005
R033 27 1/4W
R034 0.1 2W
R035 150
C028 2200P
C029 2200P
L007
L401
L402
C401 470P 1KV
R401 10 2W
D401 ESAC92M-02
C402 2200 35V
C403 2200 35V
C404 2200 35V
*PC003(1/2) TLP621
R402 1K
R403 470
C405 0.047 100V
C406 2.2 50V
R404 10K
IC401 NJM431L
R405 10K
RV402 2K
RV401 2K
R406 1.5K
R407 3.3K
R408 8.25K
IC402 (2/2)
R409 4.7K
R410 10K
R411 10K
R414 10K
R413 10K
IC402 (1/2) UPC358C
R412 10K
R415 4.7K
IC403 NJM431L
RV403 2K
R415 4.7
C407 0.01 100V
D011 1SS178
R036 33K
R037 33K
R038 27 1/4W
R041 47K
C026 4.7 50V
R042 100
C027 0.01 100V
*---- B BOARD MOUNT

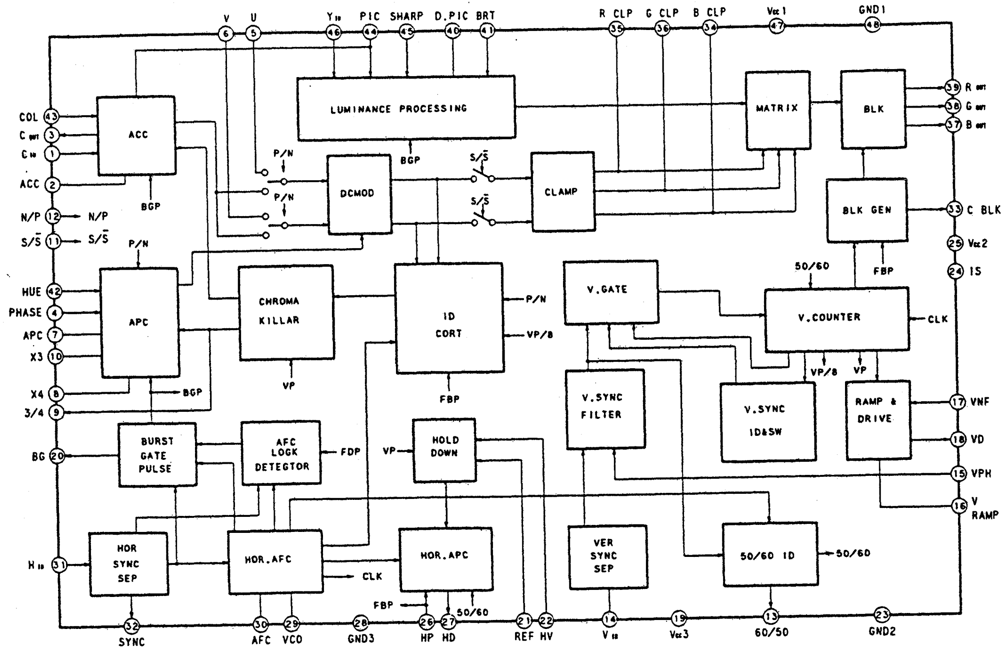
3-8. SEMICONDUCTORS

Incompatible diodes, transistors, ICs may be described in the figure of this section. Refer to the part list when each part is replaced.
The equivalent circuit conforms to the IC manufacrurer's Data Book.

Parts Name	Page
1S2836	138
1SS119	138
1SS123	138
1SS202	138
1SS226	138
2SA1162	138
2SA1226	138
2SB1274	138
2SC1623	138
2SD774	138
CXA1213S	127
CXA1260Q-Z	128
CXD1030M	128
CXD1332P	129
CXK1206M	129
CXK5814P-45L	130
CXK5816SP-12L	130
DTC143TK	138
ERC38- ? ?	138
GP-1S03	138
GP2S05	138
LM393N	130
MA152WK	138
MC14538BF	131
MC74F74N	131
MC74HC4538F	131
NE555N	132
NJM2230M	132
RC7805FA	132
RC78L09A	132
RD ? ?M-B ?	138
SI-3122V	133
SN74HC00N	133
SN74HC00NS	133
SN74HC08NS	133
SN74HC14N	133
SN74HC158NS	133
SN74HC32N	133
SN74HC541NS	134
SN74HC74N	134
SN74HCU04N	134
SN74LS06NS	134
SN74LS138N	135
SN74LS139N	135
SN74LS245N	135
SN74LS541N	135
TC74HC367P	136
TC74HC374P	136
TC74HC4075P	136
TL072CPS	136
TX429M	138
uPC358C	136
V7040	137

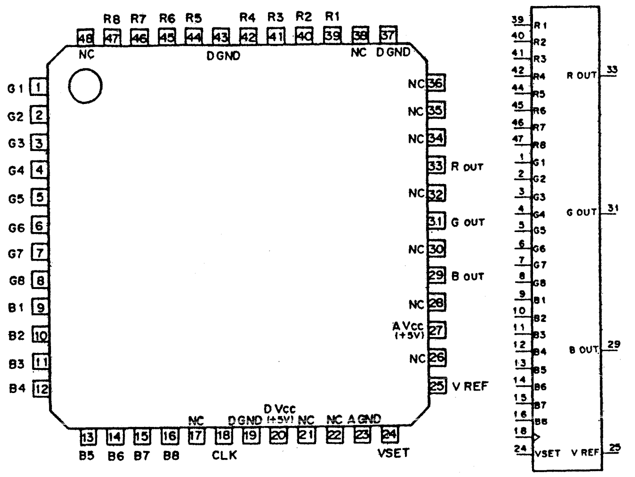
CXA1213S
****
CXA1213S (SONY) FLAT PACKAGE
C-MOS Y/CHROMA JUNGLE IC
— TOP VIEW —


GND1 48
Vcc1 47
YIN 46
SHARP 45
PIC 44
COL 43
HUE 42
BRT 41
D.PIC 40
ROUT 39
GOUT 38
BOUT 37
GCLP 36
RCLP 35
BCLP 34
CBLK 33
SYNC 32
HIN 31
AFC 30
VCO 29
GND3 28
HD 27
HP 26
Vcc2 25
1 CIN
2 ACC
3 COUT
4 PHASE
5 U
6 V
7 APC
8 X4
9 3/4
10 X3
11 S/S̄
12 N/P
13 60/50
14 VIN
15 VPH
16 VRAMP
17 VNF
18 VD
19 Vcc3
20 BG
21 REF
22 HV
23 GND2
24 IS


LUMINANCE PROCESSING
MATRIX
BLK
ACC
DEMOD
CLAMP
BLK GEN
APC
CHROMA KILLAR
ID CORT
V.GATE
V.COUNTER
BURST GATE PULSE
AFC LOCK DETECTOR
HOLD DOWN
V.SYNC FILTER
V.SYNC ID&SW
RAMP & DRIVE
HOR SYNC SEP
HOR.AFC
HOR.APC
VER SYNC SEP
50/60 ID
BGP
P/N
S/S̄
FBP
VP/8
CLK
FDP
50/60
R out
G out
B out
C BLK
Vcc2
IS
VNF
VD
VPH
V RAMP
SYNC
AFC
VCO
GND3
HP
HD
REF
HV
Vcc
Vcc3
60/50
GND2
COL
C out
C in
ACC
N/P
S/S̄
HUE
PHASE
APC
X3
X4
3/4
BG
H in
V
U
Y in
PIC
SHARP
D.PIC
BRT
R CLP
G CLP
B CLP
Vcc1
GND1

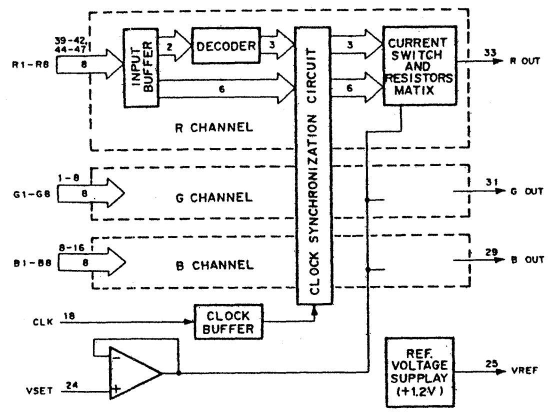
CXA1260Q-Z
****
CXA1260Q-Z (SONY) FLAT PACKAGE
8-BIT 35MHz 3-CHANNEL D/A CONVERTER
– TOP VIEW –

CXA1260Q-Z(1/2)


R8 R7 R6 R5 R4 R3 R2 R1
NC
DGND
NC DGND
G1 G2 G3 G4 G5 G6 G7 G8
B1 B2 B3 B4
B5 B6 B7 B8
CLK
VSET
DGND
D Vcc (+5V)
NC
AGND
V REF
A Vcc (+5V)
B out
G out
R out
R OUT
G OUT
B OUT
VSET
V REF

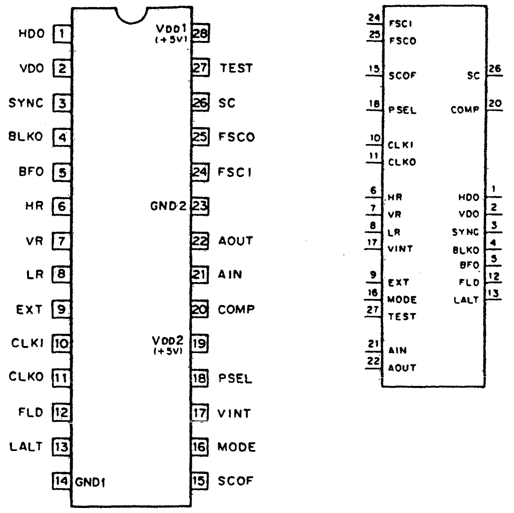
B1-B8 ; B CHANNEL DIGITAL INPUTS (LSB TO MSB)
B OUT ; B CHANNEL ANALOG OUTPUT
CLK ; D/A CONVERSION CLOCK
G1-G8 ; G CHANNEL DIGITAL INPUTS (LSB TO MSB)
G OUT ; G CHANNEL ANALOG OUTPUT
R1-R8 ; R CHANNEL DIGITAL INPUTS (LSB TO MSB)
R OUT ; R CHANNEL ANALOG OUTPUT
VREF ; REFERENCE VOLTAGE OUTPUT, +1.2V TYP.
VSET ; BIAS INPUT (VSET = +0.87V ; D/A OUT = 1Vp-p)

CXA1260Q-Z(2/2)


39-42, 44-47
R1-R8
INPUT BUFFER
DECODER
CURRENT SWITCH AND RESISTORS MATRIX
R CHANNEL
G1-G8
G CHANNEL
B1-B8
B CHANNEL
CLOCK SYNCHRONIZATION CIRCUIT
R OUT
G OUT
B OUT
CLK
CLOCK BUFFER
VSET
REF. VOLTAGE SUPPLAY (+1.2V)
VREF

CXD1030M
****
CXD1030M (SONY) FLAT PACKAGE
C-MOS SYNCHRONOUS SIGNAL GENERATOR
– TOP VIEW –

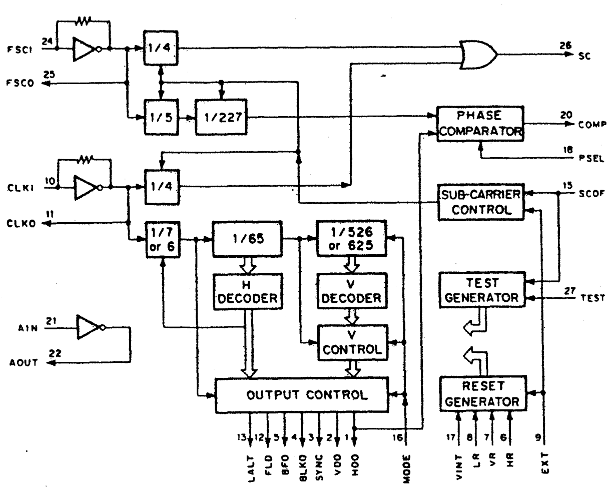
CXD1030M(1/3)


HDO 1
VDO 2
SYNC 3
BLKO 4
BFO 5
HR 6
VR 7
LR 8
EXT 9
CLKI 10
CLKO 11
FLD 12
LALT 13
14 GND1
VDD1 (+5V) 28
27 TEST
26 SC
25 FSCO
24 FSCI
GND2 23
22 AOUT
21 AIN
20 COMP
VDD2 (+5V) 19
18 PSEL
17 VINT
16 MODE
15 SCOF
FSCI
FSCO
SCOF
PSEL
CLKI
CLKO
HR
VR
LR
VINT
EXT
MODE
TEST
AIN
AOUT
SC
COMP
HDO
VDO
SYNC
BLKO
BFO
FLD
LALT

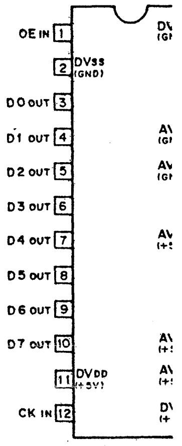
CXD1030M(2/3)

PIN No.	SYMBOL NAME	ABBREVATION
1	HDO	HORIZONTAL DRIVE PULSE OUTPUT
2	VDO	VARTICAL DRIVE PULSE OUTPUT
3	SYNC	COMPOSITE SYNCHRONOUS PULSE OUTPUT
4	BLKO	COMPOSITE BLANKING PULSE OUTPUT
5	BFO	BURST FLAG PULSE OUTPUT
6	HR	H RESET INPUT
7	VR	V RESET INPUT
8	LR	LINE ALTERNATE RESET INPUT
9	EXT	INTERNAL/EXTERNAL MODE SELECT
10	CLKI	CLOCK INPUT (NTSC : 14.31818MHz, PAL : 14.1875MHz)
11	CLKO	CLOCK OUTPUT
12	FLD	FIELD PULSE OUTPUT
13	LALT	LINE ALTERNATE PULSE OUTPUT
14	GND1	GND
15	SCOF	SUB-CARRIER OFF INPUT (ON/OFF)
16	MODE	NTSC/PAL MODE SELECT
17	VINT	INITIALIZE INPUT
18	PSEL	PHASE COMPARATE POLARITY SELECT
19	VDD2	+5V of INVERTER for FILTER
20	COMP	OUTPUT of PHASE COMPARATOR
21	AIN	INPUT of INVERTER for FILTER
22	AOUT	OUTPUT of INVERTER for FILTER
23	GND2	GND of INVERTER for FILTER
24	FSCI	4fsc CLOCK INPUT
25	FSCO	4fsc CLOCK OUTPUT
26	SC	SUB-CARRIER OUTPUT
27	TEST	TEST INPUT (NORMALLY LOW LEVEL)
28	VDD1	+5V

CXD1030M(3/3)

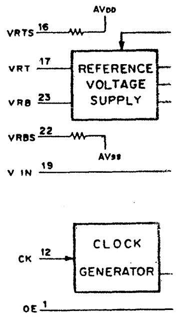

FSCI
FSCO
1/4
1/5
1/227
SC
PHASE COMPARATOR
COMP
PSEL
CLKI
CLKO
1/4
1/7 or 6
1/65
1/526 or 625
H DECODER
V DECODER
V CONTROL
SUB-CARRIER CONTROL
SCOF
TEST GENERATOR
TEST
RESET GENERATOR
AIN
AOUT
OUTPUT CONTROL
LALT
FLD
BFO
BLKO
SYNC
VDO
HDO
MODE
VINT
LR
VR
HR
EXT

CXD1175P
****
CXD1175AM (SONY) FLA
CXD1175M (SONY) FLAT
CXD1175P (SONY)
C-MOS 8-BIT 20MSPS VI
– TOP VIEW –

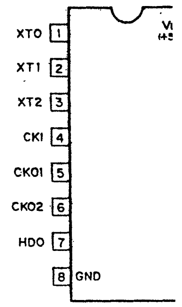

OE IN 1
2 DVSS (GND)
D0 OUT 3
D1 OUT 4
D2 OUT 5
D3 OUT 6
D4 OUT 7
D5 OUT 8
D6 OUT 9
D7 OUT 10
11 DVDD (+5V)
CK IN 12

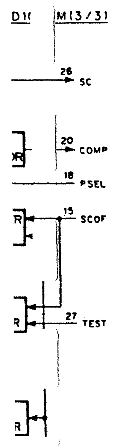
STEP	INPUT SIG VOLTAG
0	0V (VRT)
1	0.01V
⋮	⋮
127	1.34V
128	1.35V
⋮	⋮
255	2.7V (VRE

0 : LOW LEVEL
1 : HIGH LEVEL


AVDD
VRTS 16
VRT 17
VRB 23
VRBS 22
AVSS
V IN 19
REFERENCE VOLTAGE SUPPLY
CK 12
CLOCK GENERATOR
OE 1

CXD1332P
****
CXD1332P (SONY)
C-MOS SEMI-CUSTOM LS
– TOP VIEW –


XTO 1
XT1 2
XT2 3
CKI 4
CKO1 5
CKO2 6
HDO 7
8 GND

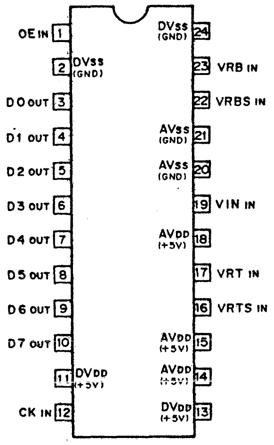


D1(
M(3/3)
26 SC
20 COMP
18 PSEL
15 SCOF
27 TEST

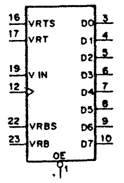
CXD1175P
* * * * * * * * * *
CXD1175AM (SONY) FLAT PACKAGE
CXD1175M (SONY) FLAT PACKAGE
CXD1175P (SONY)

C-MOS 8-BIT 20MSPS VIDEO A/D CONVERTER
– TOP VIEW –

CXD1175P(1/2)



OE IN 1
2 DVss (GND)
D0 OUT 3
D1 OUT 4
D2 OUT 5
D3 OUT 6
D4 OUT 7
D5 OUT 8
D6 OUT 9
D7 OUT 10
11 DVDD (+5V)
CK IN 12
DVss (GND) 24
23 VRB IN
22 VRBS IN
AVss (GND) 21
AVss (GND) 20
19 VIN IN
AVDD (+5V) 18
17 VRT IN
16 VRTS IN
AVDD (+5V) 15
AVDD (+5V) 14
DVDD (+5V) 13



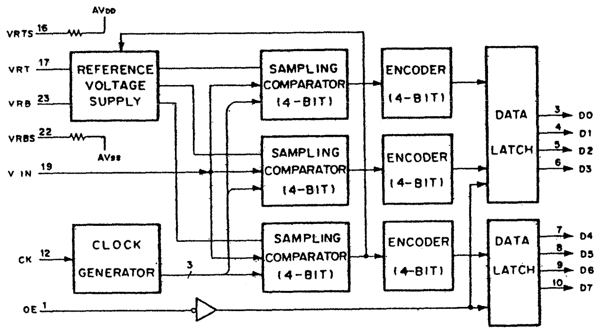
16 VRTS
17 VRT
19 V IN
12
22 VRBS
23 VRB
OE 1
D0 3
D1 4
D2 5
D3 6
D4 7
D5 8
D6 9
D7 10

AV_{DD} : ANALOG POWER SUPPLY
AV_{SS} : ANALOG GROUND
CK : CLOCK INPUT
D0 – 7 : DIGITAL DATA OUTPUTS (LSB to MSB)
DV_{DD} : DIGITAL POWER SUPPLY
DV_{SS} : DIGITAL GROUND
OE : OUTPUT ENABLE
(OE = HIGH : HIGH IMPEDANCE)
VIN : ANALOG VOLTAGE INPUT
VRB : BOTTOM REFERENCE VOLTAGE INPUT
VRBS : AS SHORT-CIRCUIT AT VRB. GENERATES + 0.6V
VRT : TOP REFERENCE VOLTAGE INPUT
VRTS : AS SHORT-CIRCUIT AT VRT. GENERATES + 2.6V

STEP	INPUT SIGNAL VOLTAGE	DATA OUTPUTS							
		D7	D6	D5	D4	D3	D2	D1	D0
0	0V (VRT)	1	1	1	1	1	1	1	1
1	0.01V	1	1	1	1	1	1	1	0
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
127	1.34V	1	0	0	0	0	0	0	0
128	1.35V	0	1	1	1	1	1	1	1
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
255	2.7V (VRB)	0	0	0	0	0	0	0	0

0 : LOW LEVEL
1 : HIGH LEVEL

CXD1175P(2/2)

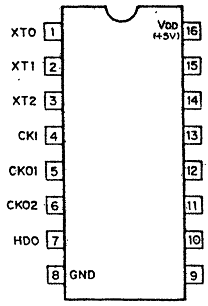


AVDD
VRTS 16
VRT 17
VRB 23
VRBS 22
AVss
V IN 19
CK 12
OE 1
REFERENCE VOLTAGE SUPPLY
SAMPLING COMPARATOR (4-BIT)
SAMPLING COMPARATOR (4-BIT)
SAMPLING COMPARATOR (4-BIT)
ENCODER (4-BIT)
ENCODER (4-BIT)
ENCODER (4-BIT)
CLOCK GENERATOR
3
DATA LATCH
DATA LATCH
3 D0
4 D1
5 D2
6 D3
7 D4
8 D5
9 D6
10 D7

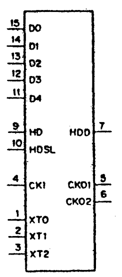
CXD1332P
* * * * * * * * * *
CXD1332P (SONY)

C-MOS SEMI-CUSTOM LSI
– TOP VIEW –

CXD1332P



XTO 1
XT1 2
XT2 3
CKI 4
CKO1 5
CKO2 6
HDO 7
8 GND
VDD (+5V) 16
15 DO
14 D1
13 D2
12 D3
11 D4
10 HDSL
9 HD

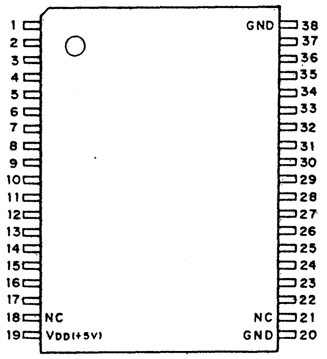


15 DO
14 D1
13 D2
12 D3
11 D4
9 HD
10 HDSL
HDO 7
4 CKI
CKO1 5
CKO2 6
1 XTO
2 XT1
3 XT2

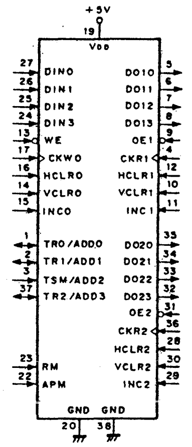
CXK1206M
* * * * * * * * * *
CXK1206M (SONY) FLAT PACKAGE

C-MOS VIDEO FIELD MEMORY (960-COLUMNx306-ROWx4-BIT)
– TOP VIEW –

CXK1206M(1/4)

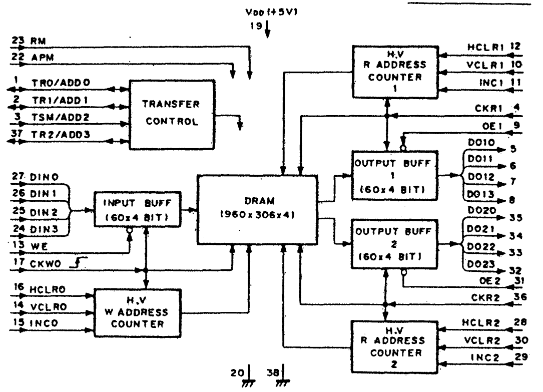


1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18 NC
19 VDD(+5V)
GND 38
37
36
35
34
33
32
31
30
29
28
27
26
25
24
23
22
NC 21
GND 20



+5V
19
VDD
27 DIN0
26 DIN1
25 DIN2
24 DIN3
13 WE
17 CKW0
16 HCLR0
14 VCLR0
15 INC0
1 TR0/ADD0
2 TR1/ADD1
3 TSM/ADD2
37 TR2/ADD3
23 RM
22 APM
DO10 5
DO11 6
DO12 7
DO13 8
OE1 9
CKR1 4
HCLR1 12
VCLR1 10
INC1 11
DO20 35
DO21 34
DO22 33
DO23 32
OE2 31
CKR2 36
HCLR2 28
VCLR2 30
INC2 29
GND GND
20 38

CXK1206M(2/4)



VDD (+5V)
19
23 RM
22 APM
1 TR0/ADD0
2 TR1/ADD1
3 TSM/ADD2
37 TR2/ADD3
TRANSFER CONTROL
27 DIN0
26 DIN1
25 DIN2
24 DIN3
13 WE
17 CKW0
INPUT BUFF (60x4 BIT)
DRAM (960x306x4)
16 HCLR0
14 VCLR0
15 INC0
H,V W ADDRESS COUNTER
H,V R ADDRESS COUNTER 1
HCLR1 12
VCLR1 10
INC1 11
CKR1 4
OE1 9
OUTPUT BUFF 1 (60x4 BIT)
DO10 5
DO11 6
DO12 7
DO13 8
DO20 35
DO21 34
DO22 33
DO23 32
OUTPUT BUFF 2 (60x4 BIT)
OE2 31
CKR2 36
H,V R ADDRESS COUNTER 2
HCLR2 28
VCLR2 30
INC2 29
20
38

CXK1206M (3/4)

PIN	SIGNAL	DESCRIPTION
1	TR0/ADD0	W PORT 0 TRANSFER SYNC I/O, ADDRESS 0 INPUT
2	TR1/ADD1	R PORT 1 TRANSFER SYNC I/O, ADDRESS 1 INPUT
3	TSM/ADD2	TRANSFER SYNCHRONOUS MODE, ADDRESS 2 INPUT
4	CKR1	R PORT 1 SHIFT SIGNAL INPUT
5	DO10	R PORT 1 DATA 0 OUTPUT
6	DO11	R PORT 1 DATA 1 OUTPUT
7	DO12	R PORT 1 DATA 2 OUTPUT
8	DO13	R PORT 1 DATA 3 OUTPUT
9	OE1	R PORT 1 OUTPUT ENABLE INPUT
10	VCLR1	R PORT 1 VERTICAL CLEAR INPUT
11	INC1	R PORT 1 LINE INCREMENT INPUT
12	HCLR1	R PORT 1 HORIZONTAL CLEAR INPUT
13	WE	W PORT 0 WRITE ENABLE INPUT
14	VCLR0	W PORT 0 VERTICAL CLEAR INPUT
15	INC0	W PORT 0 LINE INCREMENT INPUT
16	HCLR0	W PORT 0 HORIZONTAL CLEAR INPUT
17	CKW0	W PORT 0 SHIFT SIGNAL INPUT
18	NC	(no connection)
19	VDD	+5V INPUT
20	GND	GND
21	NC	(no connection)
22	APM	ADDRESS PRESET MODE INPUT
23	RMM	RECURSIVE MODE ENABLE INPUT
24	DIN3	W PORT 0 DATA 3 INPUT
25	DIN2	W PORT 0 DATA 2 INPUT
26	DIN1	W PORT 0 DATA 1 INPUT
27	DIN0	W PORT 0 DATA 0 INPUT
28	HCLR2	R PORT 2 HORIZONTAL CLEAR INPUT
29	INC2	R PORT 2 LINE INCREMENT INPUT
30	VCLR2	R PORT 2 VERTICAL CLEAR INPUT
31	OE2	R PORT 2 OUTPUT ENABLE INPUT
32	DO23	R PORT 2 DATA 3 OUTPUT
33	DO22	R PORT 2 DATA 2 OUTPUT
34	DO21	R PORT 2 DATA 1 OUTPUT
35	DO20	R PORT 2 DATA 0 OUTPUT
36	CKR2	R PORT 2 SHIFT SIGNAL INPUT
37	TR2/ADD3	R PORT 2 TRANSFER SYNC I/O, ADDRESS 3 INPUT
38	GND	GND

CXK1206M (4/4)

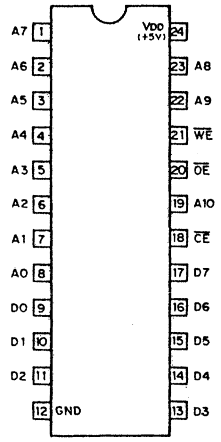
MODE SELECTION

CONTROL INPUTS					MODE
		TS, TR/ADD			
RM	APM	TSM	TR 0–2	ADD 0–3	
0	0	0	OUT PUT	–	NON RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE OUTPUT
0	0	1	IN-PUT	–	NON RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE INPUT
0	1	–	–	IN-PUT	NON RECURSIVE MODE, ADDRESS PRESET MODE
1	0	0	OUT PUT	–	RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE OUTPUT
1	0	1	IN-PUT	–	RECURSIVE MODE, TRANSFER SYNCHRONOUS MODE INPUT

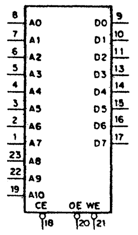
0:LOW LEVEL 1:HIGH LEVEL

CXK5814P-35
* * * * * * * * * * *
CXK5814P-35 (SONY) (ACCESS TIME = 35nS)
CXK5814P-35L (SONY) (ACCESS TIME = 35nS)
CXK5814P-45 (SONY) (ACCESS TIME = 45nS)
CXK5814P-45L (SONY) (ACCESS TIME = 45nS)
CXK5814P-55 (SONY) (ACCESS TIME = 55nS)
CXK5814P-55L (SONY) (ACCESS TIME = 55nS)
MCM2018N35 (MOTOROLA) (ACCESS TIME = 35nS)
C-MOS 16K(2Kx8) STATIC RAM
— TOP VIEW —

CXK5814P-35(1/2)



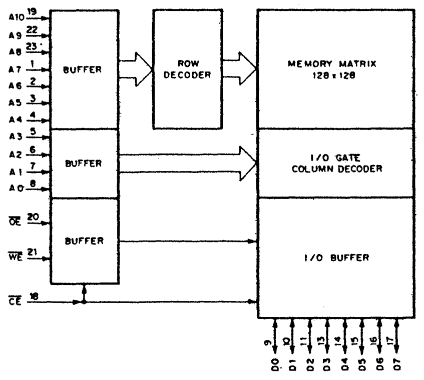
A7 1
A6 2
A5 3
A4 4
A3 5
A2 6
A1 7
A0 8
D0 9
D1 10
D2 11
12 GND
VDD (+5V) 24
23 A8
22 A9
21 WE
20 OE
19 A10
18 CE
17 D7
16 D6
15 D5
14 D4
13 D3



8 A0
7 A1
6 A2
5 A3
4 A4
3 A5
2 A6
1 A7
23 A8
22 A9
19 A10
D0 9
D1 10
D2 11
D3 13
D4 14
D5 15
D6 16
D7 17
CE 18
OE 20
WE 21

A0 ~ A10 ; ADDRESS INPUTS
D0 ~ D7 ; DATA INPUTS/OUTPUTS
CE ; CHIP ENABLE INPUT
OE ; OUTPUT ENABLE INPUT
WE ; WRITE ENABLE INPUT

CXK5814P-35(2/2)

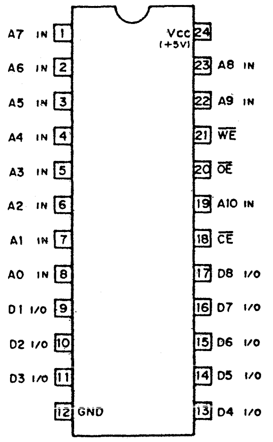


A10 19
A9 22
A8 23
A7 1
A6 2
A5 3
A4 4
A3 5
A2 6
A1 7
A0 8
OE 20
WE 21
CE 18
BUFFER
BUFFER
BUFFER
ROW DECODER
MEMORY MATRIX 128x128
I/O GATE COLUMN DECODER
I/O BUFFER
D0
D1
D2
D3
D4
D5
D6
D7

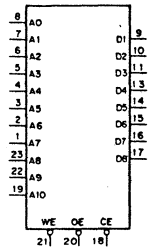
CXK5816SP-12L
* * * * * * * * * *
CXK5816SP-12L (SONY)

C-MOS 16384-BIT (2048x8) STATIC RAM
– TOP VIEW –

CXK5816SP-12L(1/2)



A7 IN 1
A6 IN 2
A5 IN 3
A4 IN 4
A3 IN 5
A2 IN 6
A1 IN 7
A0 IN 8
D1 I/O 9
D2 I/O 10
D3 I/O 11
12 GND
Vcc (+5V) 24
23 A8 IN
22 A9 IN
21 WE
20 OE
19 A10 IN
18 CE
17 D8 I/O
16 D7 I/O
15 D6 I/O
14 D5 I/O
13 D4 I/O



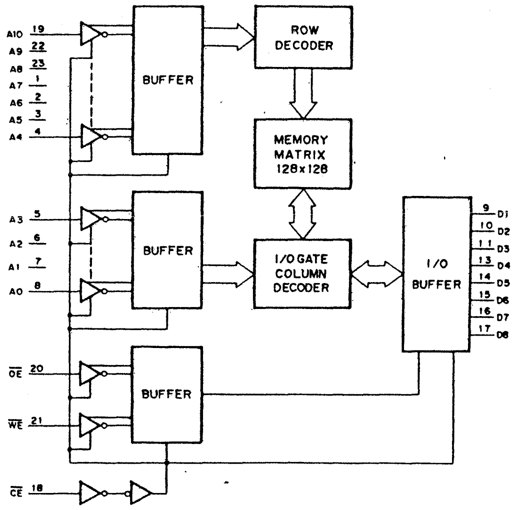
8 A0
7 A1
6 A2
5 A3
4 A4
3 A5
2 A6
1 A7
23 A8
22 A9
19 A10
D1 9
D2 10
D3 11
D4 13
D5 14
D6 15
D7 16
D8 17
WE OE CE
21 20 18

A0 – A10 ; ADDRESS INPUTS
$\overline{CE}$; CHIP ENABLE
D1 – D8 ; DATA INPUTS/OUTPUTS
$\overline{OE}$; OUTPUT ENABLE
$\overline{WE}$; WRITE ENABLE

INPUTS			FUNCTION
$\overline{CE}$	$\overline{OE}$	$\overline{WE}$	
1	X	X	NO SELECTION(HI–Z)
0	1	1	OUTPUT DISABLE(HI–Z)
0	0	1	READ
0	X	0	WRITE

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI–Z ; HIGH IMPEDANCE

CXK5816P–12L(2/2)

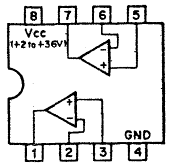


A10 19
A9 22
A8 23
A7 1
A6 2
A5 3
A4 4
A3 5
A2 6
A1 7
A0 8
OE 20
WE 21
CE 18
BUFFER
BUFFER
BUFFER
ROW DECODER
MEMORY MATRIX 128x128
I/O GATE COLUMN DECODER
I/O BUFFER
9 D1
10 D2
11 D3
13 D4
14 D5
15 D6
16 D7
17 D8

uA393DC
* * * * * * * * * *
AN1393 (MATSUSHITA)
BA6993 (ROHM)
IR9393 (SHARP)
LM2903DQ (RAYTHEON)
LM2903M (RAYTHEON) FLAT PACKAGE
LM393N (NSC)
LM393PS (TI) FLAT PACKAGE
NJM2903D (JRC)
NJM2903M (JRC) FLAT PACKAGE
uA393DC (FSC)
uPC393C (NEC)
uPC393G (NEC) FLAT PACKAGE
uPC393G2 (NEC) FLAT PACKAGE

DUAL VOLTAGE COMPARATORS
– TOP VIEW –

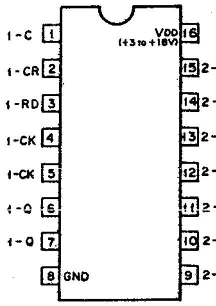
µA393DC

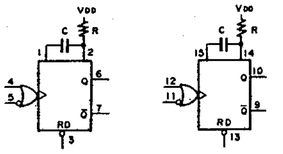


8
7
6
5
Vcc (+2 to +36V)
1
2
3
4
GND

MC14538BCP
****
HD14538BFP (HITACHI) FLAT PACKAGE
HD14538BP (HITACHI)
M4538BP (MITUBISHI)
MC14538BCP (MOTOROLA)
MC14538BF (MOTOROLA) FLAT PACKAGE
MSM4538BRS (OKI)
TC4538BF (TOSHIBA) FLAT PACKAGE
TC4538BP (TOSHIBA)
uPD4538BC (NEC)
uPD4538BG (NEC) FLAT PACKAGE

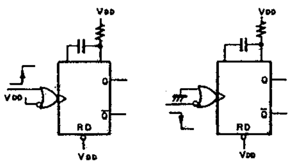
C-MOS DUAL RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
- TOP VIEW - MC14538BCP


1-C
1-CR
1-RD
1-CK
1-CK
1-Q
1-Q
GND
VDD (+3 to +18V)
2-C
2-CR
2-RD
2-CK
2-CK
2-Q
2-Q̄
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

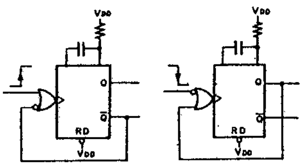

VDD
C
R
1
2
4
5
6
7
Q
Q̄
RD
3
VDD
C
R
15
14
12
11
10
9
Q
Q̄
RD
13

OUTPUT PULSE WIDTH = C·R

RETRIGGERABLE M.M.V

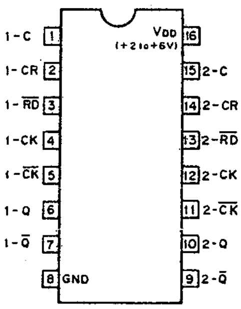

VDD
VDD
Q
Q̄
RD
VDD
VDD
Q
Q̄
RD
VDD

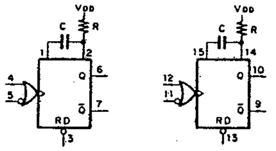
NON-RETRIGGERABLE M.M.V

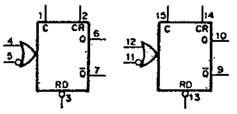

VDD
Q
Q̄
RD
VDD
VDD
Q
Q̄
RD
VDD

MC74HC4538N
****
HD74HC4538P (HITACHI)
MC74HC4538AN (MOTOROLA)
MC74HC4538F (MOTOROLA) FLAT PACKAGE
MC74HC4538N (MOTOROLA)
MSM74HC4538RS (OKI)
TC74HC4538AF (TOSHIBA) FLAT PACKAGE
TC74HC4538F (TOSHIBA) FLAT PACKAGE
TC74HC4538AP (TOSHIBA)
TC74HC4538P (TOSHIBA)

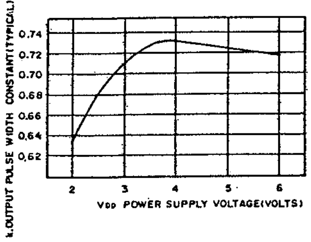
C - MOS DUAL RETRIGGERABLE / NON - RETRIGGERABLE MONOSTABLE MULTIVIBRATOR
- TOP VIEW - MC74HC4538N


1-C
1-CR
1-RD
1-CK
1-CK
1-Q
1-Q̄
GND
VDD (+2 to +6V)
2-C
2-CR
2-RD
2-CK
2-CK
2-Q
2-Q̄
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16

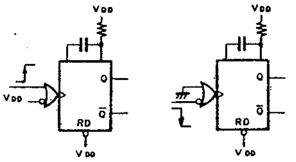

VDD
C
R
1
2
4
5
6
7
Q
Q̄
RD
3
VDD
C
R
15
14
12
11
10
9
Q
Q̄
RD
13


1
2
C
CR
4
5
6
7
Q
Q̄
RD
3
15
14
C
CR
12
11
10
9
Q
Q̄
RD
13

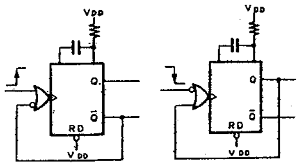
OUTPUT PULSE WIDTH = k·C·R



RETRIGGERABLE M.M.V

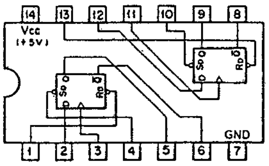

VDD
VDD
Q
Q̄
RD
VDD
VDD
Q
Q̄
RD
VDD

NON-RETRIGGERABLE M.M.V


VDD
Q
Q̄
RD
VDD
VDD
Q
Q̄
RD
VDD

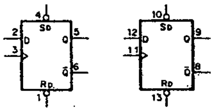
SN7474N
****
74F74PC (NS)
74F74SJ (NS) FLAT PACKAGE
HD74LS74AP (HITACHI)
HD74LS74P (HITACHI)
M53274P (MITSUBISHI)
M74LS74AP (MITSUBISHI)
MB74LS74A (FUJITSU)
MC74F74M (MOTOROLA) FLAT PACKAGE
MC74F74N (MOTOROLA)
SN7474N (TI)
SN74ALS74AN (TI)
SN74ALS74ANS (TI) FLAT PACKAGE
SN74ALS74N (TI)
SN74ALS74NS (TI) FLAT PACKAGE
SN74AS74N (TI)
SN74AS74NS (TI) FLAT PACKAGE
SN74H74N (TI)
SN74L74N (TI)
SN74LS74AN (TI)
SN74LS74ANS (TI) FLAT PACKAGE
SN74S74N (TI)

TTL D-TYPE FLIP FLOP WITH DIRECT SET/RESET
- TOP VIEW - SN7474N


14
13
12
11
10
9
8
Vcc (+5V)
SD
RD
D
Q
Q̄
SD
RD
GND
1
2
3
4
5
6
7

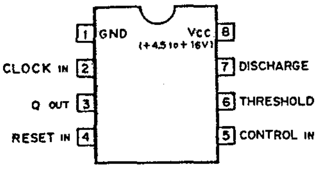
INPUTS				OUTPUTS	
$\overline{S_D}$	$\overline{R_D}$	CK	D	Q_{n+1}	$\overline{Q_{n+1}}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1*	1*
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	0	X	Q_n	$\overline{Q_n}$

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
1*; NONSTABLE

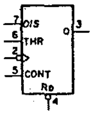

4
SD
2
D
3
5
Q
6
Q̄
RD
1
10
SD
12
D
11
9
Q
8
Q̄
RD
13

NE555N
* * * * * * * * * *
HA17555GS (HITACHI)
HA17555PS (HITACHI)
M51841P (MITSUBISHI)
NE555 (TI)
NE555N (SIGNETICS)
NJM555D (JRC)
TL1555P (TI)
uPC1555C (NEC)

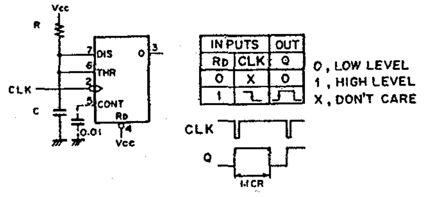
PRECISION TIMER
– TOP VIEW –


1 GND
Vcc (+4.5 to +16V) 8
CLOCK IN 2
7 DISCHARGE
Q OUT 3
6 THRESHOLD
RESET IN 4
5 CONTROL IN

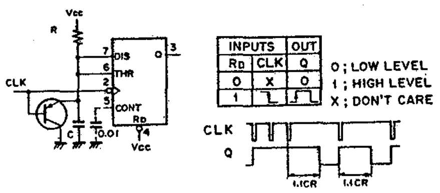
NE555N (1/2)


7 DIS
6 THR
2
5 CONT
Q 3
RD 4

MONOSTABLE MULTIVIBRATOR

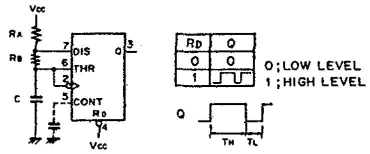

Vcc
R
7 DIS
6 THR
Q 3
CLK 2
C
5 CONT
RD 4
0.01
Vcc
INPUTS
OUT
RD
CLK
Q
0
X
0
1
0 , LOW LEVEL
1 , HIGH LEVEL
X , DON'T CARE
CLK
Q
1.1CR

RETRIGGERABLE MONO. MULTIVIBRATOR
(MISSING PULSE DETECTOR)


Vcc
R
7 DIS
6 THR
Q 3
CLK 2
5 CONT
C
0.01
RD 4
Vcc
INPUTS
OUT
RD
CLK
Q
0
X
0
1
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
CLK
Q
1.1CR
1.1CR

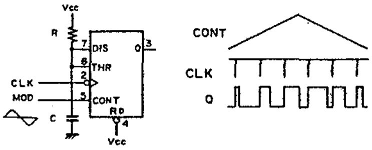
NE555N (2/2)

ASTABLE MULTIVIBRATOR

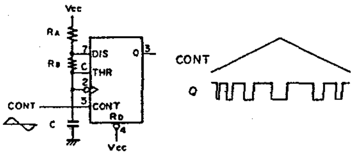

Vcc
RA
RB
7 DIS
6 THR
Q 3
2
C
5 CONT
RD 4
Vcc
RD
Q
0
0
1
0 ; LOW LEVEL
1 ; HIGH LEVEL
Q
TH
TL

$T_H = 0.693C\,(R_A + R_B)$
$T_L = 0.693C\,R_B$

PULSE WIDTH MODULATOR

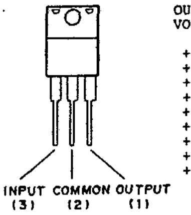

Vcc
R
7 DIS
8 THR
Q 3
CLK 2
MOD 5 CONT
C
RD 4
Vcc
CONT
CLK
Q

VCO
(PULSE POSITION MODULATOR)


Vcc
RA
RB
C
7 DIS
THR
Q 3
2
CONT 3 CONT
C
RD 4
Vcc
CONT
Q

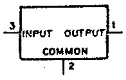
NJM78M ? ?FA
* * * * * * * * * *
NJM78M ? ?FA (JRC) (500mA)
NJM78 ? ?FA (JRC) (1A)
RC78M ? ?FA (RAYTHEON) (500mA)
RC78 ? ?FA (RAYTHEON) (1A)

POSITIVE VOLTAGE REGULATOR
– FRONT VIEW –


INPUT (3)
COMMON (2)
OUTPUT (1)

NJM78M??FA

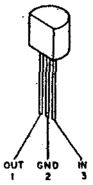
OUTPUT VOLTAGE	NJM78M??FA	NJM78??FA	RC78M??FA	RC78??FA
+5V	NJM78M05FA	NJM7805FA	RC78M05FA	RC7805FA
+6V	NJM78M06FA	NJM7806FA	RC78M06FA	RC7806FA
+8V	NJM78M08FA	NJM7808FA	---------	RC7808FA
+9V	NJM78M09FA	NJM7809FA	RC78M09FA	RC7809FA
+12V	NJM78M12FA	NJM7812FA	RC78M12FA	RC7812FA
+15V	NJM78M15FA	NJM7815FA	RC78M15FA	RC7815FA
+18V	NJM78M18FA	NJM7818FA	---------	RC7818FA
+20V	NJM78M20FA	NJM7820FA	---------	RC7820FA
+24V	NJM78M24FA	NJM7824FA	---------	RC7824FA


3 INPUT
OUTPUT 1
COMMON
2

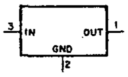
uA78L ? ?AWV
* * * * * * * * * *
AN78L ? ? (MATSUSHITA)
NJM78L ? ?A (JRC)
RC78L ? ?A (RAYTHEON)
TA78L ? ? ?AP (TOSHIBA)
uA78L ? ?ACL (TI)
uA78L ? ?AWV (FSC)
uPC78L ? ?J (NEC)

POSITIVE VOLTAGE REGULATOR (100mA)

uA78L?? AWV


OUT 1
GND 2
IN 3

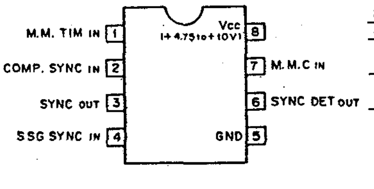
OUTPUT VOLTAGE	AN78L??	NJM78L??A	RC78L??A	TA78L???AP
+2.6V	-------	NJM78L02A	RC78L02A	----------
+4V	AN78L04	---------	--------	----------
+5V	AN78L05	NJM78L05A	RC78L05A	TA78L005AP
+6V	AN78L06	NJM78L06A	RC78L06A	TA78L006AP
+6.2V	-------	---------	--------	----------
+7V	AN78L07	---------	--------	TA78L007AP
+7.5V	-------	---------	--------	TA78L075AP
+8V	AN78L08	NJM78L08A	RC78L08A	TA78L008AP
+8.2V	-------	---------	--------	----------
+9V	AN78L09	NJM78L09A	RC78L09A	TA78L009AP
+10V	AN78L10	---------	--------	TA78L010AP
+12V	AN78L12	NJM78L12A	RC78L12A	TA78L012AP
+13.2V	-------	---------	--------	TA78L132AP
+15V	AN78L15	NJM78L15A	RC78L15A	TA78L015AP
+18V	AN78L18	NJM78L18A	RC78L18A	TA78L018AP
+20V	AN78L20	NJM78L20A	RC78L20A	TA78L020AP
+24V	AN78L24	NJM78L24A	RC78L24A	TA78L024AP


3 IN
OUT 1
GND
2

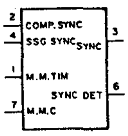
OUTPUT VOLTAGE	uA78L??ACL	uA78L??AWV	uPC78L??J
+2.6V	uA78L02ACL	uA78L26AWV	---------
+4V	----------	----------	---------
+5V	uA78L05ACL	uA78L05AWV	uPC78L05J
+6V	----------	----------	---------
+6.2V	uA78L06ACL	uA78L62AWV	---------
+7V	----------	----------	---------
+7.5V	----------	----------	---------
+8V	uA78L08ACL	----------	uPC78L08J
+8.2V	----------	uA78L82AWV	---------
+9V	uA78L09ACL	uA78L09AWV	---------
+10V	uA78L10ACL	----------	uPC78L10J
+12V	uA78L12ACL	uA78L12AWV	uPC78L12J
+13.2V	----------	----------	---------
+15V	uA78L15ACL	uA78L15AWV	uPC78L15J
+18V	----------	uA78L18AWV	---------
+20V	----------	----------	---------
+24V	----------	uA78L24AWV	---------

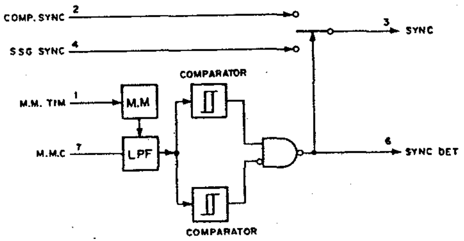
NJM2230M
* * * * * * * * * *
NJM2230M (JRC) FLAT PACKAGE

VIDEO SIGNAL DETECTOR
– TOP VIEW –


M.M. TIM IN 1
Vcc (+4.75 to +10V) 8
COMP. SYNC IN 2
7 M.M.C IN
SYNC OUT 3
6 SYNC DET OUT
SSG SYNC IN 4
GND 5

NJM2230M

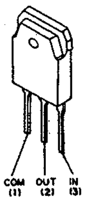

2 COMP. SYNC
4 SSG SYNC
SYNC 3
1 M.M.TIM
SYNC DET 6
7 M.M.C

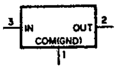

COMP. SYNC 2
SSG SYNC 4
3 SYNC
COMPARATOR
M.M. TIM 1
M.M
M.M.C 7
LPF
6 SYNC DET
COMPARATOR

SI-3052V
••••••••••
SI-3052V (SANKEN)
SI-3122V (SANKEN)
POSITIVE VOLTAGE REGULATOR (2A)

SI-3052V

5V SI−3052V
12V SI−3122V

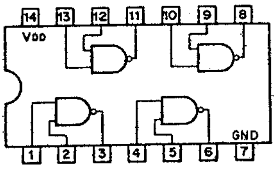

COM (1)
OUT (2)
IN (3)

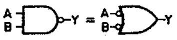

3
IN
OUT
2
COM(GND)
1

TC74HC00P
* * * * * * * * * *
74AC00PC (FSC)
74ACT00PC (FSC)
74AC00SJ (FSC) FLAT PACKAGE
HD74HC00P (HITACHI)
MC74HC00AF (MOTOROLA) FLAT PACKAGE
MC74HC00AN (MOTOROLA)
MC74HC00F (MOTOROLA) FLAT PACKAGE
MC74HC00N (MOTOROLA)
MC74HCT00N (MOTOROLA)
MN74HC00S (MATSUSHITA) FLAT PACKAGE
MSM74HC00RS (OKI)
SN74HC00N (TI)
SN74HC00NS (TI) FLAT PACKAGE
TC74AC00P (TOSHIBA)
TC74HC00AF (TOSHIBA) FLAT PACKAGE
TC74HC00F (TOSHIBA) FLAT PACKAGE
TC74HC00P (TOSHIBA)
uPD74HC00C (NEC)
uPD74HC00G (NEC) FLAT PACKAGE

C-MOS QUAD 2-INPUT NAND GATE
− TOP VIEW −

TC74HC00P


14
13
12
11
10
9
8
VDD
GND
1
2
3
4
5
6
7



$Y = \overline{A \cdot B} = \overline{A} + \overline{B}$

A	B	Y
0	0	1
0	1	1
1	0	1
1	1	0

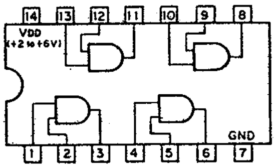
0; LOW LEVEL
1; HIGH LEVEL

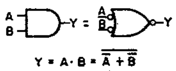
TYPE	VDD
TC74AC00P	+2 to +5.5V
MC74HCT00N 74ACT00PC	+5V
OTHER TYPES	+2 to +6V

TC74HC08P
* * * * * * * * * *
74AC08PC (FSC)
74AC08SJ (FSC) FLAT PACKAGE
HD74HC08P (HITACHI)
LC74HC08 (SANYO)
LC74HC08M (SANYO) FLAT PACKAGE
MC74HC08AF (MOTOROLA) FLAT PACKAGE
MC74HC08AN (MOTOROLA)
MC74HC08N (MOTOROLA)
SN74HC08N (TI)
SN74HC08NS (TI) FLAT PACKAGE
TC74HC08AF (TOSHIBA) FLAT PACKAGE
TC74HC08F (TOSHIBA) FLAT PACKAGE
TC74HC08P (TOSHIBA)
uPD74HC08C (NEC)

C-MOS QUAD 2-INPUT AND GATE
− TOP VIEW −

TC74HC08


14
13
12
11
10
9
8
VDD
(+2 to +6V)
GND
1
2
3
4
5
6
7



$Y = A \cdot B = \overline{\overline{A} + \overline{B}}$

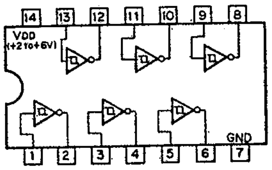
A	B	Y
0	0	0
0	1	0
1	0	0
1	1	1

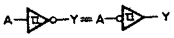
0; LOW LEVEL
1; HIGH LEVEL

TC74HC14P
* * * * * * * * * *
74AC14PC (FSC)
HD74HC14P (HITACHI)
MC74HC14AF (MOTOROLA) FLAT PACKAGE
MC74HC14N (MOTOROLA)
MSM74HC14RS (OKI)
SN74HC14N (TI)
SN74HC14NS (TI) FLAT PACKAGE
TC74HC14F (TOSHIBA) FLAT PACKAGE
TC74HC14P (TOSHIBA)
uPD74HC14C (NEC)
uPD74HC14G (NEC) FLAT PACKAGE

C-MOS SCHMITT TRIGGER INVERTER
− TOP VIEW −

TC74HC14P

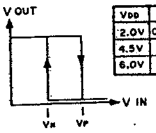

14
13
12
11
10
9
8
VDD
(+2 to +6V)
GND
1
2
3
4
5
6
7



$Y = \overline{A}$

A	Y
0	1
1	0

0; LOW LEVEL
1; HIGH LEVEL

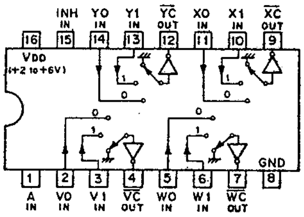


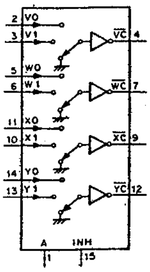
VDD	VN	VP
2.0V	0.75V	1.25V
4.5V	1.9V	2.7V
6.0V	2.6V	3.6V

TC74HC158P
* * * * * * * * * *
HD74HC158P (HITACHI)
MC74HC158N (MOTOROLA)
MSM74HC158RS (OKI)
SN74HC158N (TI)
SN74HC158NS (TI) FLAT PACKAGE
TC74HC158F (TOSHIBA) FLAT PACKAGE
TC74HC158P (TOSHIBA)
uPD74HC158C (NEC)

C-MOS 2-LINE-TO-1-LINE INVERTED DATA SELECTOR/MULTIPLEXER
− TOP VIEW −

TC74HC158P


INH IN
YO IN
Y1 IN
YC OUT
XO IN
X1 IN
XC OUT
16
15
14
13
12
11
10
9
VDD
(+2 to +6V)
1
0
GND
1
2
3
4
5
6
7
8
A IN
VO IN
V1 IN
VC OUT
WO IN
W1 IN
WC OUT


2 VO
3 V1
VC 4
5 WO
6 W1
WC 7
11 XO
10 X1
XC 9
14 YO
13 Y1
YC 12
A
INH
1
15

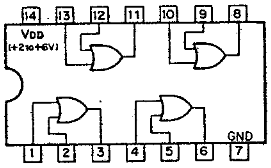
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

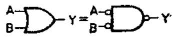
CONT. IN		ON CHANNEL
INH	A	
0	0	0
0	1	1
1	X	GND

TC74HC32P
* * * * * * * * * *
74AC32PC (FSC)
74AC32SJ (FSC) FLAT PACKAGE
HD74HC32P (HITACHI)
MC74HC32AF (MOTOROLA) FLAT PACKAGE
MC74HC32AN (MOTOROLA)
MC74HC32N (MOTOROLA)
SN74HC32N (TI)
SN74HC32NS (TI) FLAT PACKAGE
TC74HC32AF (TOSHIBA) FLAT PACKAGE
TC74HC32F (TOSHIBA) FLAT PACKAGE
TC74HC32P (TOSHIBA)

C-MOS 2-INPUT OR GATE
− TOP VIEW −

TC74HC32P


14
13
12
11
10
9
8
VDD
(+2 to +6V)
GND
1
2
3
4
5
6
7



$Y = A + B = \overline{\overline{A} \cdot \overline{B}}$

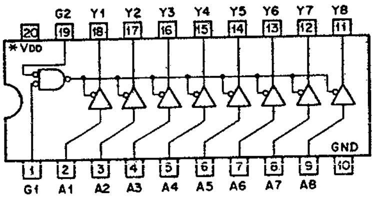
A	B	Y
0	0	0
0	1	1
1	0	1
1	1	1

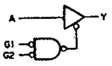
0; LOW LEVEL
1; HIGH LEVEL

MC74HC541N
****
74AC541PC (FSC)
CD74ACT541E (RCA)
MC74HC541F (MOTOROLA) FLAT PACKAGE
MC74HC541N (MOTOROLA)
MC74HCT541F (TI) FLAT PACKAGE
SN74HC541N (TI)
SN74HC541NS (TI) FLAT PACKAGE
SN74HCT541N (TI)
SN74HCT541NS (TI) FLAT PACKAGE
TC74HC541AF (TOSHIBA) FLAT PACKAGE
TC74HC541F (TOSHIBA) FLAT PACKAGE
TC74HC541P (TOSHIBA)
TC74HCT541F (TOSHIBA) FLAT PACKAGE

C-MOS BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS
- TOP VIEW -

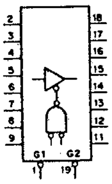
MC74HC541N





G1	G2	A	Y
0	0	0	0
0	0	1	1
1	X	X	HI-Z
X	1	X	HI-Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

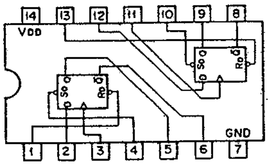


* VDD HC ; +2 to +6V
ACT, HCT ; +5V

TC74HC74P
****
74AC74PC (FSC)
74AC74SJ (FSC) FLAT PACKAGE
74ACT74PC (FSC)
74ACT74SJ (FSC) FLAT PACKAGE
HD74HC74P (HITACHI)
MC74HC74AF (MOTOROLA) FLAT PACKAGE
MC74HC74AN (MOTOROLA)
MC74HC74F (MOTOROLA) FLAT PACKAGE
MC74HC74N (MOTOROLA)
MN74HC74S (MATSUSHITA) FLAT PACKAGE
MSM74HC74RS (OKI)
SN74HC74N (TI)
SN74HC74NS (TI) FLAT PACKAGE
TC74AC74F (TOSHIBA) FLAT PACKAGE
TC74HC74AF (TOSHIBA) FLAT PACKAGE
TC74HC74AP (TOSHIBA)
TC74HC74F (TOSHIBA) FLAT PACKAGE
TC74HC74P (TOSHIBA)
uPD74HC74C (NEC)
uPD74HC74G (NEC) FLAT PACKAGE

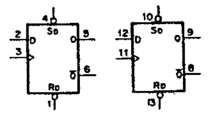
C-MOS D-TYPE FLIP FLOP WITH DIRECT SET/RESET
- TOP VIEW -

TC74HC74P



INPUTS				OUTPUTS	
$\overline{S_D}$	$\overline{R_D}$	CK	D	Qn+1	$\overline{Q_{n+1}}$
0	1	X	X	1	0
1	0	X	X	0	1
0	0	X	X	1	1
1	1	↑	1	1	0
1	1	↑	0	0	1
1	1	0	X	Qn	$\overline{Q_n}$

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE



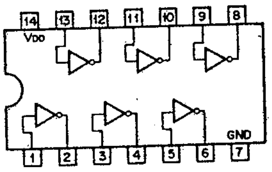
NOTE :

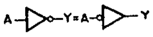
TYPE	VDD
74AC/74HC	+2 to +6V
74ACT	+5V

TC74HC04P
****
74AC04PC (FSC)
74AC04SJ (FSC) FLAT PACKAGE
74ACT04SJ (FSC) FLAT PACKAGE
HD74HC04P (HITACHI)
MC74HC04AF (MOTOROLA) FLAT PACKAGE
MC74HC04AN (MOTOROLA)
MC74HC04F (MOTOROLA) FLAT PACKAGE
MC74HC04N (MOTOROLA)
MC74HCT04N (MOTOROLA)
MC74HCU04N (MOTOROLA)
MN74HC04S (MATSUSHITA) FLAT PACKAGE
MSM74HC04RS (OKI)
SN74HC04N (TI)
SN74HC04NS (TI) FLAT PACKAGE
SN74HCU04N (TI)
SN74HCU04NS (TI) FLAT PACKAGE
TC74HC04AF (TOSHIBA) FLAT PACKAGE
TC74HC04AP (TOSHIBA)
TC74HC04F (TOSHIBA) FLAT PACKAGE
TC74HC04P (TOSHIBA)
TC74HCT04AF (TOSHIBA) FLAT PACKAGE
TC74HCT04AP (TOSHIBA)
TC74HCT04AF (TOSHIBA)
TC74HCT04P (TOSHIBA)
TC74HCU04AF (TOSHIBA) FLAT PACKAGE
TC74HCU04F (TOSHIBA) FLAT PACKAGE
TC74HCU04P (TOSHIBA)
uPD74HC04C (NEC)
uPD74HC04G (NEC) FLAT PACKAGE
uPD74HCU04C (NEC)

C-MOS HEX INVERTER
- TOP VIEW -

TC74HC04P





$Y = \overline{A}$

A	Y
0	1
1	0

0 : LOW LEVEL
1 : HIGH LEVEL

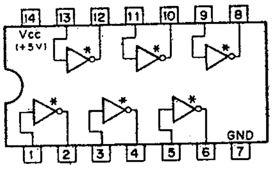
NOTE :

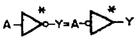
TYPE	VDD
74ACT04 TYPES 74HCT04 TYPES	+5V
OTHER TYPES	+2V to +6V

SN7406N
****
HD7406P (HITACHI)
HD74LS06P (HITACHI)
M53206P (MITSUBISHI)
SN7406N (TI)
SN7406NS (TI) FLAT PACKAGE
SN74LS06N (TI)
SN74LS06NS (TI) FLAT PACKAGE

TTL INVERTER BUFFER/DRIVER WITH OPEN-COLLECTOR
- TOP VIEW -

SN7406N





$Y = \overline{A}$

A	Y
0	1
1	0

0 ; LOW LEVEL
1 ; HIGH LEVEL
* ; OPEN COLLECTOR

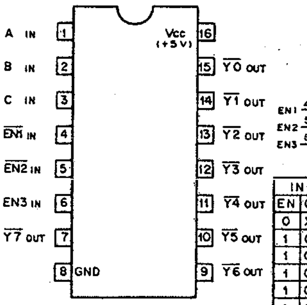
SN74S138N

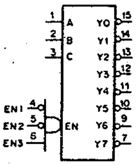
* * * * * * * * * *

74F138PC (FSC)
HD74LS138P (HITACHI)
M74LS138P (MITSUBISHI)
MB74LS138 (FUJITSU)
MC74F138PC (MOTOLORA)
N74F138N (SIGNETICS)
SN74ALS138N (TI)
SN74ALS138NS (TI) FLAT PACKAGE
SN74AS138N (TI)
SN74AS138NS (TI) FLAT PACKAGE
SN74LS138N (TI)
SN74LS138NS (TI) FLAT PACKAGE
SN74S138N (TI)

TTL 3-TO-8-LINE DECODER/DEMULTIPLEXER
- TOP VIEW -

SN74S138N


A IN 1
B IN 2
C IN 3
EN1 IN 4
EN2 IN 5
EN3 IN 6
Y7 OUT 7
8 GND
Vcc (+5V) 16
15 Y0 OUT
14 Y1 OUT
13 Y2 OUT
12 Y3 OUT
11 Y4 OUT
10 Y5 OUT
9 Y6 OUT


1 A
2 B
3 C
EN1 4
EN2 5
EN3 6
EN
Y0 15
Y1 14
Y2 13
Y3 12
Y4 11
Y5 10
Y6 9
Y7 7

INPUTS				OUTPUTS							
EN	C	B	A	$\overline{Y7}$	$\overline{Y6}$	$\overline{Y5}$	$\overline{Y4}$	$\overline{Y3}$	$\overline{Y2}$	$\overline{Y1}$	$\overline{Y0}$
0	X	X	X	1	1	1	1	1	1	1	1
1	0	0	0	1	1	1	1	1	1	1	0
1	0	0	1	1	1	1	1	1	1	0	1
1	0	1	0	1	1	1	1	1	0	1	1
1	0	1	1	1	1	1	1	0	1	1	1
1	1	0	0	1	1	1	0	1	1	1	1
1	1	0	1	1	1	0	1	1	1	1	1
1	1	1	0	1	0	1	1	1	1	1	1
1	1	1	1	0	1	1	1	1	1	1	1

EN = EN1·EN2·EN3

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

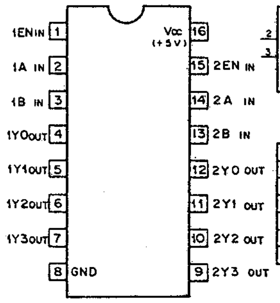
SN74S139N

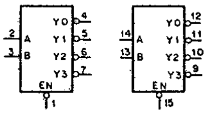
* * * * * * * * * *

74F139PC (FSC)
HD74LS139P (HITACHI)
M74LS139P (MITSUBISHI)
MB74LS139 (FUJITSU)
MC74F139N (MOTOROLA)
SN74ALS139NS (TI) FLAT PACKAGE
SN74LS139ANS (TI) FLAT PACKAGE
SN74LS139NS (TI) FLAT PACKAGE
SN74LS139N (TI)
SN74S139N (TI)

TTL 2-TO-4-LINE DECODER/DEMULTIPLEXER
- TOP VIEW -

SN74S139N


1EN IN 1
1A IN 2
1B IN 3
1Y0 OUT 4
1Y1 OUT 5
1Y2 OUT 6
1Y3 OUT 7
8 GND
Vcc (+5V) 16
15 2EN IN
14 2A IN
13 2B IN
12 2Y0 OUT
11 2Y1 OUT
10 2Y2 OUT
9 2Y3 OUT


2 A
3 B
Y0 4
Y1 5
Y2 6
Y3 7
EN
1
14 A
13 B
Y0 12
Y1 11
Y2 10
Y3 9
EN
15

INPUTS			OUTPUTS			
EN	B	A	Y3	Y2	Y1	Y0
0	0	0	1	1	1	0
0	0	1	1	1	0	1
0	1	0	1	0	1	1
0	1	1	0	1	1	1
1	X	X	1	1	1	1

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE

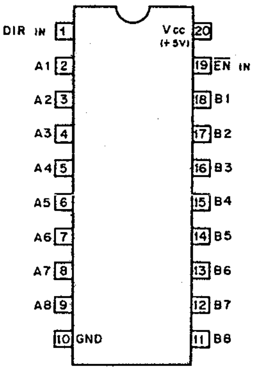
SN74LS245N

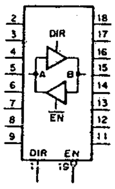
* * * * * * * * * *

74F245PC (FSC)
HD74LS245P (HITACHI)
MB74LS245 (FUJITSU)
MC74LS245DW (MOTOROLA) FLAT PACKAGE
N74LS245DW (SIGNETICS) FLAT PACKAGE
SN74ALS1245ANS (TI) FLAT PACKAGE
SN74ALS245AN (TI)
SN74ALS245ANS (TI) FLAT PACKAGE
SN74ALS245N (TI)
SN74LS245N (TI)
SN74LS245NS (TI) FLAT PACKAGE

TTL BILATERAL SCHMITT TRIGGER BUS TRANSCEIVERS
WITH 3-STATE OUTPUTS
- TOP VIEW -

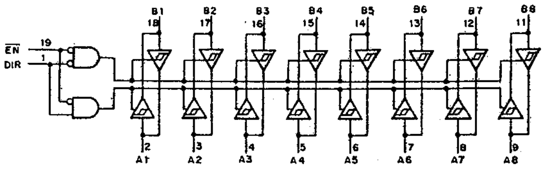
SN74LS245N


DIR IN 1
A1 2
A2 3
A3 4
A4 5
A5 6
A6 7
A7 8
A8 9
10 GND
Vcc (+5V) 20
19 EN IN
18 B1
17 B2
16 B3
15 B4
14 B5
13 B6
12 B7
11 B8


2
3
4
5
6
7
8
9
DIR
A
B
EN
18
17
16
15
14
13
12
11
DIR
EN
1
19

EN	DIR	OPERATION
0	0	B to A
0	1	A to B
1	X	HI - Z

0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE


EN 19
DIR 1
B1 18
B2 17
B3 16
B4 15
B5 14
B6 13
B7 12
B8 11
2 A1
3 A2
4 A3
5 A4
6 A5
7 A6
8 A7
9 A8

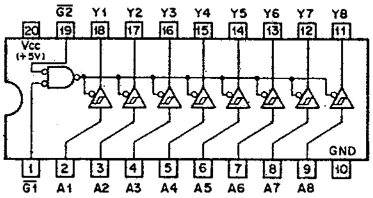
SN74LS541N

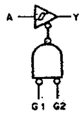
* * * * * * * * * *

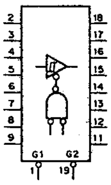
74F541PC (NS)
74F541SPC (NS)
74F541S (NS) FLAT PACKAGE
74F541SJ (NS) FLAT PACKAGE
SN74ALS541N (TI)
SN74ALS541NS (TI) FLAT PACKAGE
SN74LS541N (TI)

TTL BUFFERS AND LINE DRIVERS WITH 3-STATE OUTPUTS
- TOP VIEW -

SN74LS541N


G2 Y1 Y2 Y3 Y4 Y5 Y6 Y7 Y8
20 19 18 17 16 15 14 13 12 11
Vcc (+5V)
GND
1 2 3 4 5 6 7 8 9 10
G1 A1 A2 A3 A4 A5 A6 A7 A8




2
3
4
5
6
7
8
9
18
17
16
15
14
13
12
11
G1 G2
1
19

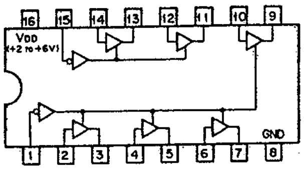
G1	G2	A	Y
0	0	0	0
0	0	1	1
1	X	X	HI-Z
X	1	X	HI-Z

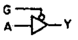
0 ; LOW LEVEL
1 ; HIGH LEVEL
X ; DON'T CARE
HI-Z ; HIGH IMPEDANCE

TC74HC367P
* * * * * * * * * *
HD74HC367P (HITACHI)
MC74HC367F (MOTOROLA) FLAT PACKAGE
MC74HC367N (MOTOROLA)
MN74HC367S (MATSUSHITA) FLAT PACKAGE
SN74HC367N (TI)
SN74HC367NS (TI) FLAT PACKAGE
TC74HC367AF (TOSHIBA) FLAT PACKAGE
TC74HC367F (TOSHIBA) FLAT PACKAGE
TC74HC367P (TOSHIBA)
uPD74HC367C (NEC)
uPD74HC367G (NEC) FLAT PACKAGE

C-MOS BUS DRIVER WITH 3-STATE OUTPUTS
– TOP VIEW –

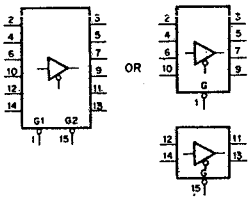
TC74HC367P


16
15
14
13
12
11
10
9
VDD
(+2 to +6V)
GND
1
2
3
4
5
6
7
8



G	A	Y
0	0	0
0	1	1
1	X	HI-Z

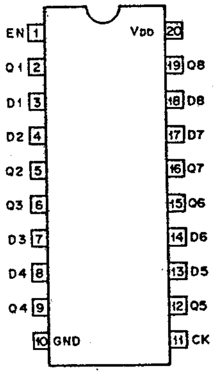
0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE

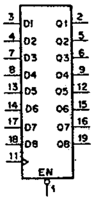

2
4
6
10
12
14
G1
G2
1
15
3
5
7
9
11
13
OR
2
4
6
10
G
1
3
5
7
9
12
14
15
11
13

TC74HC374P
* * * * * * * * * *
74AC374PC (FSC)
74ACT374PC (FSC)
74ACT374SJ (FSC) FLAT PACKAGE
HD74HC374P (HITACHI)
HD74HCT374P (HITACHI)
MC74HC374F (MOTOROLA) FLAT PACKAGE
MC74HC374N (MOTOROLA)
MC74HCT374N (MOTOROLA)
MN74HC374S (MATSUSHITA) FLAT PACKAGE
MSM74HC374RS (OKI)
SN74HC374N (TI)
SN74HC374NS (TI) FLAT PACKAGE
SN74HCT374N (TI)
TC74HC374AF (TOSHIBA) FLAT PACKAGE
TC74HC374F (TOSHIBA) FLAT PACKAGE
TC74HC374P (TOSHIBA)
TC74HCT374F (TOSHIBA) FLAT PACKAGE
TC74HCT374P (TOSHIBA)
uPD74HC374C (NEC)
uPD74HC374G (NEC) FLAT PACKAGE.

C-MOS 3-STATE OCTAL D-TYPE FLIP-FLOP
– TOP VIEW –

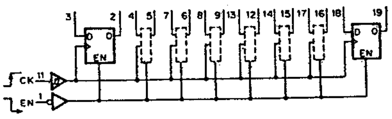
TC74HC374P


EN 1
Q1 2
D1 3
D2 4
Q2 5
Q3 6
D3 7
D4 8
Q4 9
10 GND
VDD 20
19 Q8
18 D8
17 D7
16 Q7
15 Q6
14 D6
13 D5
12 Q5
11 CK


3 D1
4 D2
7 D3
8 D4
13 D5
14 D6
17 D7
18 D8
11
EN
1
Q1 2
Q2 5
Q3 6
Q4 9
Q5 12
Q6 15
Q7 16
Q8 19

INPUTS			OUT
EN	D	CK	Q
0	1	ʃ	1
0	0	ʃ	0
0	X	0	Qo
1	X	X	HI-Z

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE
HI-Z; HIGH IMPEDANCE

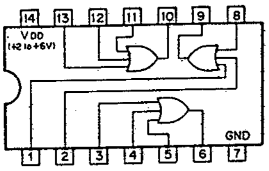

3
2
4
5
7
6
8
9
13
12
14
15
17
16
18
19
D
Q
EN
CK 11
EN 1

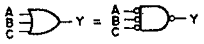
NOTE:

TYPE	VDD
74AC/74HC	+2 to +6V
74ACT/74HCT	+5V

TC74HC4075P
••••••••••
MC74HC4075N (MOTOROLA)
SN74HC4075N (TI)
TC74HC4075P (TOSHIBA)
C-MOS 3-INPUT OR GATE
— TOP VIEW —

TC74HC4075P


14
13
12
11
10
9
8
VDD
(+2 to +6V)
GND
1
2
3
4
5
6
7



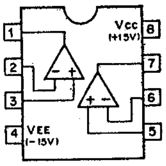
$Y = A + B + C = \overline{\overline{A} \cdot \overline{B} \cdot \overline{C}}$

C	B	A	Y
0	0	0	0
X	X	1	1
X	1	X	1
1	X	X	1

0; LOW LEVEL
1; HIGH LEVEL
X; DON'T CARE

TL072CP
••••••••••
M5238P (MITSUBISHI)
M5238FP (MITSUBISHI) FLAT PACKAGE
TL072ACP (TI)
TL072BCP (TI)
TL072CP (TI)
TL072CPS (TI) FLAT PACKAGE
OPERATIONAL AMPLIFIER
(LOW-NOISE JFET-INPUT)
— TOP VIEW —

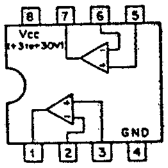
TL072CP


1
2
3
4
VEE
(–15V)
Vcc
(+15V)
8
7
6
5

LM358JG
* * * * * * * * * *
LM358JG (TI)
LM358P (TI)
LM358PS (TI) FLAT PACKAGE
uPC358C (NEC)
uPC358G (NEC) FLAT PACKAGE
uPC358G2 (NEC) FLAT PACKAGE

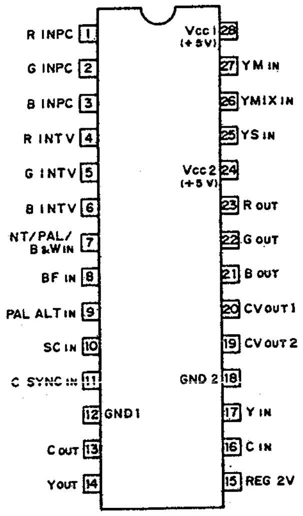
DUAL OPERATIONAL AMPLIFIERS
– TOP VIEW –

LM358JG

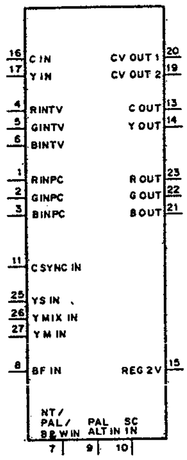

8
7
6
5
Vcc
(+3 to +30V)
GND
1
2
3
4

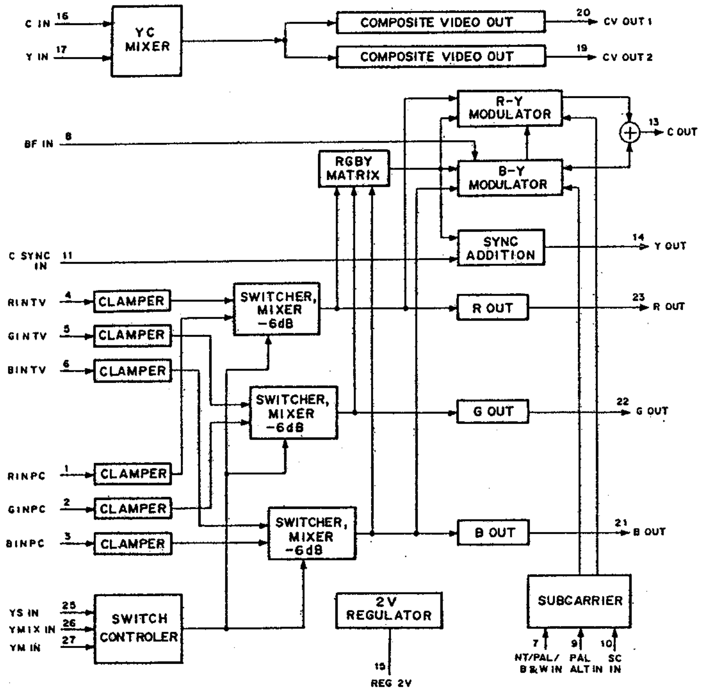
V7040

V7040 (SONY)
NTSC/PAL ENCODER
— TOP VIEW —


R INPC 1
G INPC 2
B INPC 3
R INTV 4
G INTV 5
B INTV 6
NT/PAL/ B&WIN 7
BF IN 8
PAL ALT IN 9
SC IN 10
C SYNC IN 11
12 GND1
C OUT 13
YOUT 14
Vcc1 (+5V) 28
27 YM IN
26 YMIX IN
25 YS IN
Vcc2 (+5 V) 24
23 R OUT
22 G OUT
21 B OUT
20 CV OUT1
19 CV OUT2
GND 2 18
17 Y IN
16 C IN
15 REG 2V

V7040(1/2)


16 C IN
17 Y IN
4 RINTV
5 GINTV
6 BINTV
1 RINPC
2 GINPC
3 BINPC
11 C SYNC IN
25 YS IN
26 YMIX IN
27 YM IN
8 BF IN
CV OUT 1 20
CV OUT 2 19
C OUT 13
Y OUT 14
R OUT 23
G OUT 22
B OUT 21
REG 2V 15
NT/ PAL/ B&WIN 7
PAL ALT IN 9
SC IN 10


C IN 16
Y IN 17
YC MIXER
COMPOSITE VIDEO OUT
COMPOSITE VIDEO OUT
20 CV OUT1
19 CV OUT2
BF IN 8
R-Y MODULATOR
B-Y MODULATOR
RGBY MATRIX
13 C OUT
SYNC ADDITION
14 Y OUT
C SYNC IN 11
RINTV 4
GINTV 5
BINTV 6
CLAMPER
CLAMPER
CLAMPER
SWITCHER, MIXER -6dB
SWITCHER, MIXER -6dB
SWITCHER, MIXER -6dB
R OUT
23 R OUT
G OUT
22 G OUT
B OUT
21 B OUT
RINPC 1
GINPC 2
BINPC 3
CLAMPER
CLAMPER
CLAMPER
YS IN 25
YMIX IN 26
YM IN 27
SWITCH CONTROLER
2V REGULATOR
15 REG 2V
SUBCARRIER
7 NT/PAL/ B&WIN
9 PAL ALT IN
10 SC IN

V7040(2/2)

FUNCTION TABLE

PIN NO.	SYMBOLIC NAME	DESCRIPTION
1	RINPC	RED INPUT FROM PERSONAL COMPUTER
2	GINPC	GREEN INPUT FROM PERSONAL COMPUTER
3	BINPC	BLUE INPUT FROM PERSONAL COMPUTER
4	RINTV	RED INPUT FROM TV
5	GINTV	GREEN INPUT FROM TV
6	BINTV	BLUE INPUT FROM TV
7	NT/PAL/B&W IN	MODE SELECTION VOLTAGE INPUT NTSC MODE: 4.0V ≦ V7 PAL MODE: 2.0V ≦ V7 ≦ 3.0V BLACK AND WHITE MODE: V7 ≦ 0.8V V7 IS THE VOLTAGE MUST BE APPLIED
8	BF IN	BURST FLAG SIGNAL INPUT
9	PAL ALT IN	PAL LINE ALTERNATION PULSE INPUT
10	SC IN	SUBCARRIER INPUT
11	C SYNC IN	COMPOSITE SYNCHRONIZING SIGNAL INPUT
12	GND1	GROUND EXCLUDED RGB OUT AND CV OUT
13	C OUT	CHROMA SIGNAL OUTPUT
14	Y OUT	Y SIGNAL OUTPUT
15	REG 2V	REFERENCE VOLTAGE
16	C IN	CHROMA SIGNAL INPUT
17	Y IN	Y SIGNAL INPUT
18	GND2	GROUND FOR RGB OUT AND CV OUT STAGES
19	CV OUT2	COMPOSITE VIDEO SIGNAL OUTPUT
20	CV OUT1	
21	B OUT	BLUE SIGNAL OUTPUT
22	G OUT	GREEN SIGNAL OUTPUT
23	R OUT	RED SIGNAL OUTPUT
24	Vcc2	Vcc FOR RGB OUT AND CV OUT STAGES
25	YS IN	See below table.
26	YMIX IN	
27	YM IN	
28	Vcc1	Vcc EXCLUDED RGB OUT AND CV OUT STAGES

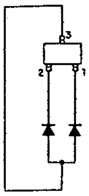
YS/YMIX/YM SWITCH TABLE

YS	YMIX	YM	MODE
L	L	L	TV
L	L	H	HALF TONE
L	H	L	TV
L	H	H	HALF TONE
H	L	L	PC
H	L	H	PC
H	H	L	MIX
H	H	H	MIX

L ≦ 0.8V
H ≧ 2.0V

144-4

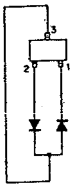
(SCALE 4/1)
TOP VIEW



144-4
* * * * * * * * * *
1S2835
1S2836
1SS179
1SS180
1SS181
1SS303
DAP202K
MA151WA
MA152WA

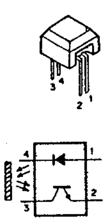
144-3

(SCALE 4/1)
TOP VIEW



144-3
* * * * * * * * * *
1SS123
1SS226
DA204K
DA204U
HSM88AS
MA153

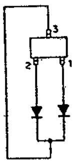
205-1



205-1
....
GP2S05

144-5

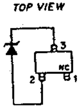
(SCALE 4/1)
TOP VIEW



144-5
* * * * * * * * * *
1S2837
1S2838
1SS304
DAN202K
DAN202U
MA151WK
MA152WK

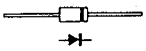
144-6

(SCALE 4/1)
TOP VIEW



144-6
* * * * * * * * * *
02CZ ? ?X
MA3300
RD ? ?M
RD ? ?M-B ?

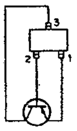
63-1



63-1
* * * * * * * * * *
10D2A
10DF1
10DF2
10DF6
10DF8
10E-1
10E-2
11DF4
11E2
11ES ?
11EQS04
11EQS10
1N400 ?
1N4148H
1S144
1S1553
1S1555
1S1555S
1S1555SS
1S1585
1S1587
1S1588
1S1834
1S1835
1S1885
1S2075
1S2075K
1S2076
1S2076A
1S2095A
1S2339
1S2348H
1S2473
1S953
1SR35-200A
1SS110
1SS119
1SS120
1SS130
1SS131
1SS132
1SS133
1SS134
1SS135E
1SS136
1SS144
1SS148
1SS162
1SS168
1SS176
1SS202
1SS238
1SS53
1SS81
1SS82
1SS83
1SS84
1SV34
1T-22A
1T261
1T262
30DF2
5082-2810
D1NL20
D1V60
D3S4M
DS442
DSB15
EL1Z
ERA15
ERA15-01
ERA15-06
ERA21-06
ERA22-06
ERA22-08
ERA38-06
ERA84-009
ERB12- ? ?
ERB12- ? ?RK
ERB43- ? ?
ERB44- ? ?
ERB83-004
ERB84-009
ERB91- ? ?
ERC24- ? ?S
ERC38- ? ?
ERC91-02
ESJA52- ? ?
ESJA53- ? ?
F1-06
GP08 ?
MA161
MA165
QSCH-1754
RA1Z
RGP10A
RH1
RH1A
RH1B
RH1C
RU1A
RU1C
RU2M
RU3AM
RU4AM
S2LA-20
S2V20
S3K40
S5277B
SB340
SIB01-02
SIB01-04
SIB01-06
SM-1A-02
SM-1XF08
SS1.5J4
TVR06B
TVR06J
US1035
W03B
W03C

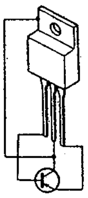
144-1

(SCALE 4/1)
TOP VIEW



144-1
* * * * * * * * * *
2SA1037K
2SA1122
2SA1162
2SA1162G
2SA1162Y
2SA1163
2SA1179
2SA1226
2SA1235
2SA1245
2SA1330
2SA1338AL-7
2SA1461
2SA1462
2SA1464
2SA1576
2SA1611
2SA1682
2SA812
2SB1295
2SB624
2SB815

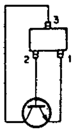
15-1



15-1
* * * * * * * * * *
2SA1009A
2SA1010
2SA1012-O
2SA1012-Y
2SA1077
2SA1133
2SA1133-A
2SA1328
2SA1329
2SA1469
2SA473
2SA671
2SA671TD
2SA768
2SA771
2SB1015
2SB1133
2SB1274
2SB507HP
2SB521
2SB546A
2SB553
2SB553-O
2SB566
2SB566A
2SB568
2SB596
2SB703A
2SB825
2SB834
2SB856
2SB857
2SB858
2SB861
2SB941
2SB983

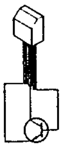
144-2

(SCALE 4/1)
TOP VIEW



144-2
* * * * * * * * * *
2SC1009A
2SC1621
2SC1622A
2SC1623
2SC1654
2SC2223
2SC2351
2SC2412K
2SC2712
2SC2712G
2SC2712Y
2SC2713
2SC2714
2SC2715
2SC2733
2SC2757
2SC2758
2SC2759
2SC2812
2SC2813
2SC2814
2SC3052
2SC3053
2SC3115
2SC3295
2SC3326
2SC3326N
2SC3356
2SC3360
2SC3392-AY7
2SC3429N
2SC3545
2SC3624
2SC3624A
2SC3661
2SC3722K
2SC3734
2SC3735
2SC4081
2SC4175
2SC4177
2SC4178
2SC4213
2SC4412
2SD1030
2SD1048
2SD596
NTM2369
UN2224

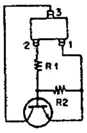
6-2



6-2
....
2SC2676
2SC2958
2SC458
2SC458K
2SC458LG
2SD471
2SD571
2SD773
2SD774
2SD774-4

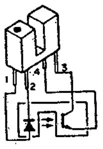
144-7

TOP VIEW (SCALE 4/1)



144-7
* * * * * * * * * *
DTC113ZU (R1 = 1K, R2 = 10K)
DTC114EK (R1 = 10K, R2 = 10K)
DTC114TK (R1 = 10K, R2 = ∞)
DTC114EU (R1 = 10K, R2 = 10K)
DTC114TU (R1 = 10K, R2 = ∞)
DTC114WU (R1 = 10K, R2 = 4.7K)
DTC114YK (R1 = 10K, R2 = 47K)
DTC114YU (R1 = 10K, R2 = 47K)
DTC123EU (R1 = 2.2K, R2 = 2.2K)
DTC123JU (R1 = 2.2K, R2 = 47K)
DTC123YK (R1 = 2.2K, R2 = 10K)
DTC124EK (R1 = 22K, R2 = 22K)
DTC124EU (R1 = 22K, R2 = 22K)
DTC124TU (R1 = 22K, R2 = ∞)
DTC124XK (R1 = 22K, R2 = 47K)
DTC124XU (R1 = 22K, R2 = 47K)
DTC143EU (R1 = 4.7K, R2 = 4.7K)
DTC143TK (R1 = 4.7K, R2 = ∞)
DTC143TU (R1 = 4.7K, R2 = ∞)
DTC143XU (R1 = 4.7K, R2 = 10K)
DTC143ZU (R1 = 4.7K, R2 = 47K)
DTC144EK (R1 = 47K, R2 = 47K)
DTC144EU (R1 = 47K, R2 = 47K)
DTC144TK (R1 = 47K, R2 = ∞)
DTC144TU (R1 = 47K, R2 = ∞)
DTC144WK (R1 = 47K, R2 = 22K)
DTC144WU (R1 = 47K, R2 = 22K)
DTD123YK (R1 = 2.2K,R2 = 10K)
FA1F4L-L30 (R1 = 47K, R2 = 22K)
FA1F4N-L35 (R1 = 22K, R2 = 47K)

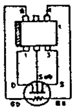
140-3



140-3
* * * * * * * * * *
GP-1S03
GP-1S04
GP-1S05
GP-1S52
GP-1S53
GP-1S54
ON1110
TLP801A

8-3

TOP VIEW



8-3
....
TX429-2
TX429D-2
TX429M

SECTION 4

ELECTRICAL ADJUSTMENTS

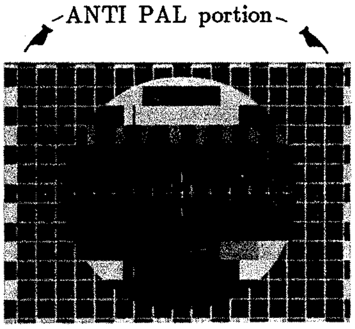
[Instruments to be used]

- Oscilloscope
- Frequency counter
- Monitor TV
- S signal generator
- Special color bar

- TPE in the parts arrangement diagram is grounded.

- Signal generator 1411 (color bar signal)
  FULL FIELD
  Y, B-Y, R-Y, BURST, SYNC ... ON
  SETUP : 0%
  AMPL : 75%
  V.PHASE : ALTER
  WHITE : 100IRE
  or color pattern generator
- 5-step signal
- Multi-burst signal

4-1. ANTI PAL ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Input the special color bar. 2. Display the special color bar on the monitor.	Monitor  Gray at the ANTI PAL portion is all the same to peripheral.	⊘RV998(C-1)/VA-5 ⊘LV999(A-1)/VA-5 ⊘RV999(A-2)/VA-5

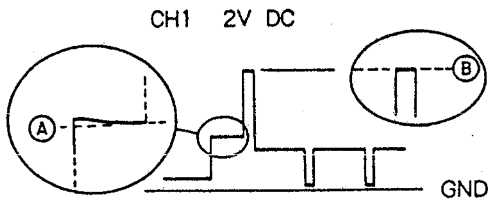
4-2. DET.V ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Input the color bar signal from the signal generator 1411. (Using digital voltmeter)	TP68(F-5)/VA-5 A = 2.00±0.05 Vp-p	⊘RV6(E-5)/VA-5 (DET.V)

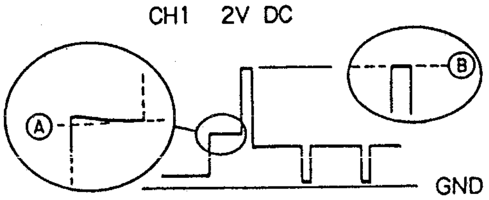
4-3. SLICE.V ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Input the color bar signal from the signal generator 1411. (Using digital voltmeter)	TP36(A-7)/VA-5 A = 4.00±0.01 Vp-p	⊘RV24(A-6)/VA-5 (SLICE.V)

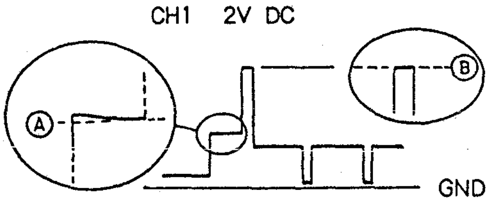
4-4. R.CUT AND R.DRV ADJUSTMENTS

Condition when adjusting	Specification	Adjusting point
1. Trigger the oscilloscope with VD so as to make the waveform as shown in the figure with B RUN AFT DRY 2. Set the oscilloscope range to 500 mV DC. 3. Adjust the regulated power supply to 5.00V and connect the CH-1 probe. Match the bright line with the suitable cursor. 4. Return the CH-1 probe to TP21 and match A with the 5.00V cursor by turning the RV11. 5. Set the oscilloscope range to 1V DC and adjust the regulated power supply to 10.00V and connect the CH-1 probe. Match the bright line with the suitable cursor. 6. Return the CH-1 probe to TP21 and match B with 10.00V cursor by turning RV10. Note: In this time, take care not to turn the control on the CUT side by mistake. If turned, perform the CUT adjustment again.	[R.CUT adjustment] TP21(C-6)/VA-5 A = 5.00±0.01 Vp-p [R.DRV adjustment] TP21(C-6)/VA-5 B = 10.00±0.02 Vp-p 	⊘RV11(B-5)/VA-5 (R.CUT) ⊘RV10(B-5)/VA-5 (R.DRV)

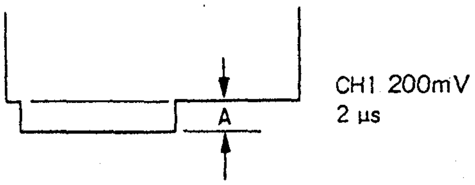
4-5. G.CUT AND G.DRV ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Trigger the oscilloscope with VD so as to make the waveform as shown in the figure with B RUN AFT DRY 2. Set the oscilloscope range to 500mV DC. 3. Adjust the regulated power supply to 5.00 V and connect the CH-1 probe. Match the bright line with the suitable cursor. 4. Return the CH-1 probe to TP26 and match A with the 5.00V cursor by turning the RV13. 5. Set the oscilloscope range to 1V DC and adjust the regulated power supply to 10.00V and connect the CH-1 probe. Match the bright line with the suitable cursor. 6. Return the CH-1 probe to TP26 and match B with 10.00V cursor by turning RV12. Note: In this time, take care not to turn the control on the CUT side by mistake. If turned, perform the CUT adjustment again.	[G.CUT adjustment] TP26(D-6)/VA-5 A = 5.00±0.01 Vp-p [G.DRV adjustment] TP26(D-6)/VA-5 B = 10.00±0.02 Vp-p CH1 2V DC  	⊘RV13(C-6)/VA-5 (G.CUT) ⊘RV12(C-5)/VA-5 (G.DRV)

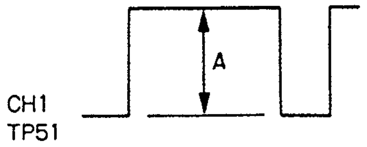
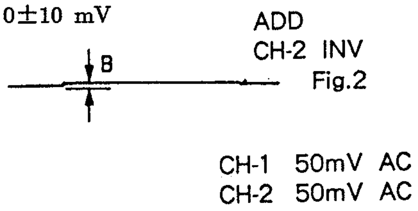
4-6. B.CUT AND B.DRV ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Trigger the oscilloscope with VD so as to make the waveform as shown in the figure with B RUN AFT DRY 2. Set the oscilloscope range to 500mV DC. 3. Adjust the regulated power supply to 5.00V and connect the CH-1 probe. Match the bright line with the suitable cursor. 4. Return the CH-1 probe to TP31 and match A with the 5.00V cursor by turning the RV15. 5. Set the oscilloscope range to 1 V DC and adjust the regulated power supply to 10.00V and connect the CH-1 probe. Match the bright line with the suitable cursor. 6. Return the CH-1 probe to TP31 and match B with 10.00V cursor by turning RV14. Note: In this time, take care not to turn the control on the CUT side by mistake. If turned, perform the CUT adjustment again.	[B.CUT adjustment] TP31(E-6)/VA-5 A = 5.00±0.01 Vp-p [B.DRV adjustment] TP31(E-6)/VA-5 B = 10.00±0.02 Vp-p 	⊘RV15(C-6)/VA-5 (B.CUT) ⊘RV14(C-5)/VA-5 (B.DRV)

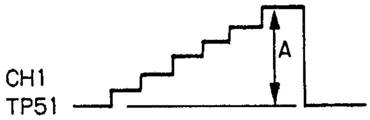
4-7. SUB.BRT ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Input the 10-step B/W signal in G.IN. 2. Set the INPUT SELECT to "RGB" (refer to 1.General, see page 11.). 3. Set the MONITOR MODE to "INPUT E TO E" to output the step signal. (refer to 1. General, see page 22.). 4. Connect the oscilloscope CH-1 to TP29 and ground. 5. Adjust A with RV20 (SUB. BRT).	TP29(C-8)/VA-5 A = 125±50 mV 	⊘RV20(A-5)/VA-5 (SUB.BRT)

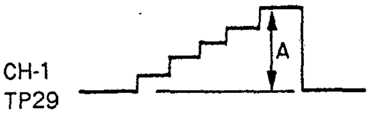
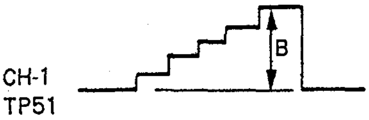
4-8. D/A CONV. ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Press SOURCE/MEMORY and set to the memory screen so that the monitor becomes white. If not white, turn off the power switch once, then on. 2. Connect the oscilloscope CH-1 to TP51(D/A,G2) and adjust A with RV402(MHC-4). (Fig.1) 3. Connect the oscilloscope CH-1 to TP51(D/A,G2) and CH-2 to TP48(D/A,R2) and minimize B with RV26. (Fig.2) 4. Connect the oscilloscope CH-1 to TP51(D/A,G2) and CH-2 to TP54(D/A,B2) and minimize B with RV28. (Fig.2)	TP51(B-10)/VA-5 A = 1.0±0.02 Vp-p  Fig.1 TP51(B-10)/VA-5 TP48(B-10)/VA-5 TP54(A-10)/VA-5 B = 0±10 mV  ADD CH-2 INV B Fig.2 CH-1 50mV AC CH-2 50mV AC Fig.2	⊘RV402(C-3)/MHC-4 (D/A CONV) ⊘RV26(C-10)/VA-5 (SUB. R-MONI) ⊘RV28(B-10)/VA-5 (SUB. B-MONI)

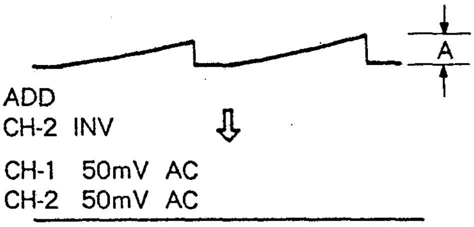
4-9. SUB.PIX ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Input the 5-step B/W signal to G.IN. 2. Set the INPUT SELECT to "RGB" (refer to 1.General, see page 11.). 3. Press SOURCE/MEMORY and set to the input screen so as to output the step signal on the monitor. 4. Connect the oscilloscope CH-1 to TP51(D/A,G2) and adjust A with RV19.	TP51(B-10)/VA-5 A = 0.97±0.02 Vp-p  Fig.1	⊘RV19(A-4)/VA-5 (SUB.PIX)

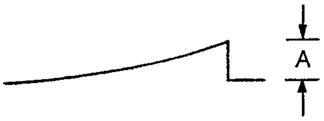
4-10. S.AGC AND P.AGC ADJUSTMENTS

Condition when adjusting	Specification	Adjusting point
1. Input the 5-step B/W signal to G.IN. 2. Set the INPUT SELECT to "RGB" (refer to 1.General, see page 11.). 3. Turn RV5 fully clockwise. 4. Connect the oscilloscope CH-1 to TP29(G-OUT) then adjust A with RV7. (Fig.1)	TP29(C-8)/VA-5 A = 5.0±0.1 Vp-p  Fig.1	⊘RV7(D-4)/VA-5 (S.AGC)
5. Connect the oscilloscope CH-1 to TP51(D/A,G2) then adjust B with RV5. (Fig.2)	TP51(B-10)/VA-5 B = 0.97±0.02 Vp-p  Fig.2	⊘RV5(C-3)/VA-5 (P.AGC)

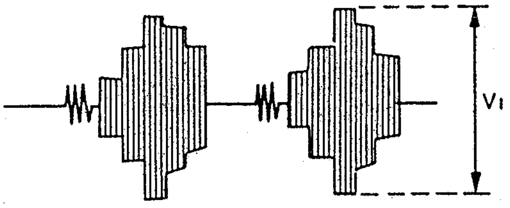
4-11(a). R-E AND B-E LEVEL ADJUSTMENTS

Condition when adjusting	Specification	Adjusting point
1. Set the INPUT SELECT to "RGB" (refer to 1.General, see page 11.). 2. Connect the oscilloscope CH-1 to TP51(D/A,G2) and the CH-2 to TP48(D/A,R2) and minimize A with RV1.	[R-E level adjustment] TP51(B-10)/VA-5 TP48(B-10)/VA-5 Minimize the bright line amplitude of oscilloscope with RV1. Input it to G.IN and R.IN.	⊘RV1(C-1)/VA-5 (R-E LEV)
3. Connect the oscilloscope CH-1 to TP51(D/A,G2) and the CH-2 to TP54(D/A,B2) and minimize A with RV2.	[B-E level adjustment] TP51(B-10)/VA-5 TP54(A-10)/VA-5 Minimize the bright line amplitude of oscilloscope with RV2. Input it to G.IN and R.IN. 	⊘RV2(D-1)/VA-5 (B-E LEV)

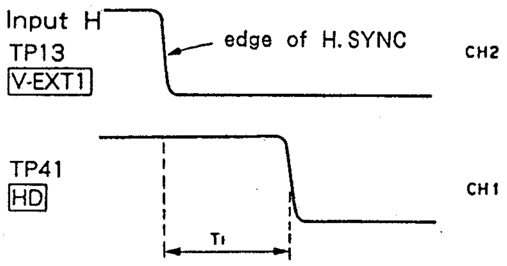
4-11(b). SUB R-GAIN/B-GAIN LEVEL ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Set the INPUT SELECT to "VIDEO" (refer to 1.General, see page 11.). 2. Connect the oscilloscope CH-1 to TP51(D/A,G2) and the CH-2 to TP48(D/A,R2) and minimize A with RV21. 3. Connect the oscilloscope CH-1 to TP51(D/A,G2) and the CH-2 to TP54(D/A,B2) and minimize A with RV23.	TP51(B-10)/VA-5 TP48(B-10)/VA-5 TP54(A-10)/VA-5  ADD CH-2 INV CH-1 50mV AC CH-2 50mV AC	⊘RV21(B-7)/VA-5 (SUB. R-GAIN) ⊘RV23(D-7)/VA-5 (SUB. B-GAIN)

4-12. SUB.SHARP AND FLATNESS ADJUSTMENTS

Condition when adjusting	Specification	Adjusting point
1. Set the INPUT SELECT to "RGB" (refer to 1.General, see page 11.). 2. Change the input signal to the multi-burst waveform. 3. Turn V_1 to specified value with RV25. 4. Set the INPUT SELECT to "VIDEO" (refer to 1.General, see page 11.). 5. Turn V_1 to specified value with RV16.	[SUB.SHARP adjustment] TP40(A-9)/VA-5 Input to R.IN and G.IN. V_1 = 800±10 mV [FLATNESS adjustment] TP40(A-9)/VA-5 V_1 = 800±10 mV TP40 DTL-V 	⊘RV25(A-8)/VA-5 (SUB.SHARP) ⊘RV16(A-3)/VA-5 (FLATNESS)

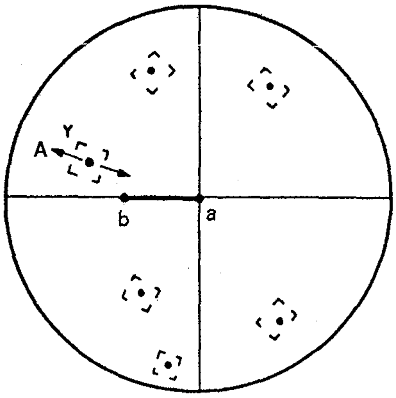
4-13. H.DLY ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Set the INPUT SELECT to "VIDEO" (refer to 1.General, see page 11.). 2. After turning the input signal to 10-step, adjust T_1 with RV4.	TP13(F-1)/VA-5 TP41(A-9)/VA-5 T_1 = 1.0±0.1 μsec  Input H TP13 V-EXT1 edge of H.SYNC CH2 TP41 HD CH1 T1	RV4(F-9)/VA-5 (H.DLY)

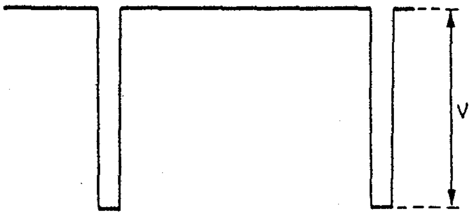
4-14. SUB.CARRIER ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Connect the oscilloscope to TP56 and match the frequency at the frequency counter with CV401(MHC-4).	TP56(D-10)/VA-5 4.433619 MHz±20 Hz	⊘CV401(B-6)/MHC-4

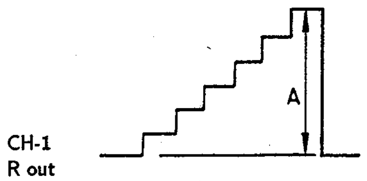
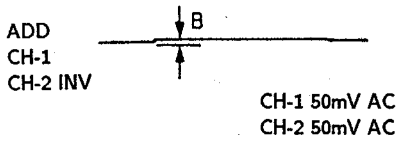
4-15. COLOR ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Set the INPUT SELECT to "VIDEO" (refer to 1.General, see page 11.). The color bar should be output on the monitor. 2. Adjust A direction with RV17 (COLOR) to the center while observing the vectorscope. Note: Be sure to adjust the straight line a to b with the control of the vectorscope in advance.	VIDEO OUT or MONITOR OUT 	⊘RV17(A-4)/VA-5 (SUB.COLOR)

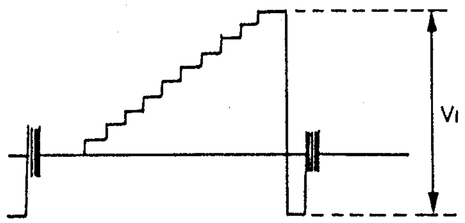
4-16. SYNC.MONITOR LEVEL ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Terminate SYNC OUT at 75-ohm. 2. Adjust V_1 to the specified value with RV29.	SYNC OUT (75-ohm Terminated) $V_1 = 1.00 \pm 0.05$ Vp-p 	⊘RV29(E-10)/VA-5 (SYNC.MONI. LEVEL)

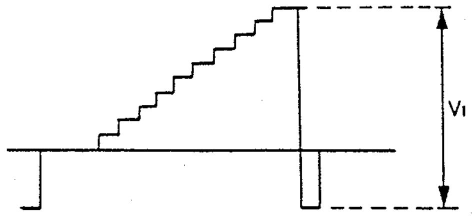
4-17. R.G.B. MONITOR OUTPUT LEVEL ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Connect the 75-ohm terminal to the R terminal, connect the oscilloscope CH-1 to the 75-ohm terminal. Adjust A with RV33. (Fig.1) 2. Terminate the R terminal at 75-ohm. Connect the 75-ohm terminal to the G terminal and connect the oscilloscope CH-2 to the 75-ohm terminal. Adjust B with RV34. (Fig.2) 3. Terminate the R terminal at 75-ohm. Connect the 75-ohm terminal to the B terminal and connect the oscilloscope CH-2 to the 75-ohm terminal. Adjust B with RV35. (Fig.2)	A = 0.714±0.02 Vp-p  Fig.1 B = 0±10 mV  ADD CH-1 CH-2 INV B CH-1 50mV AC CH-2 50mV AC Fig.2	⊘RV33(C-11)/VA-5 (R-MONI. LEVEL) ⊘RV34(D-11)/VA-5 (G-MONI. LEVEL) ⊘RV35(D-11)/VA-5 (B-MONI. LEVEL)

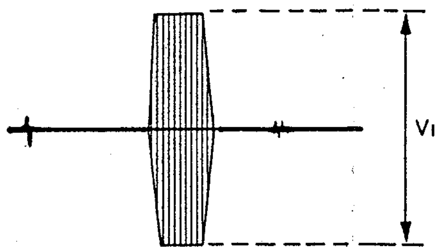
4-18. V-MONITOR LEVEL ADJUSTMENT

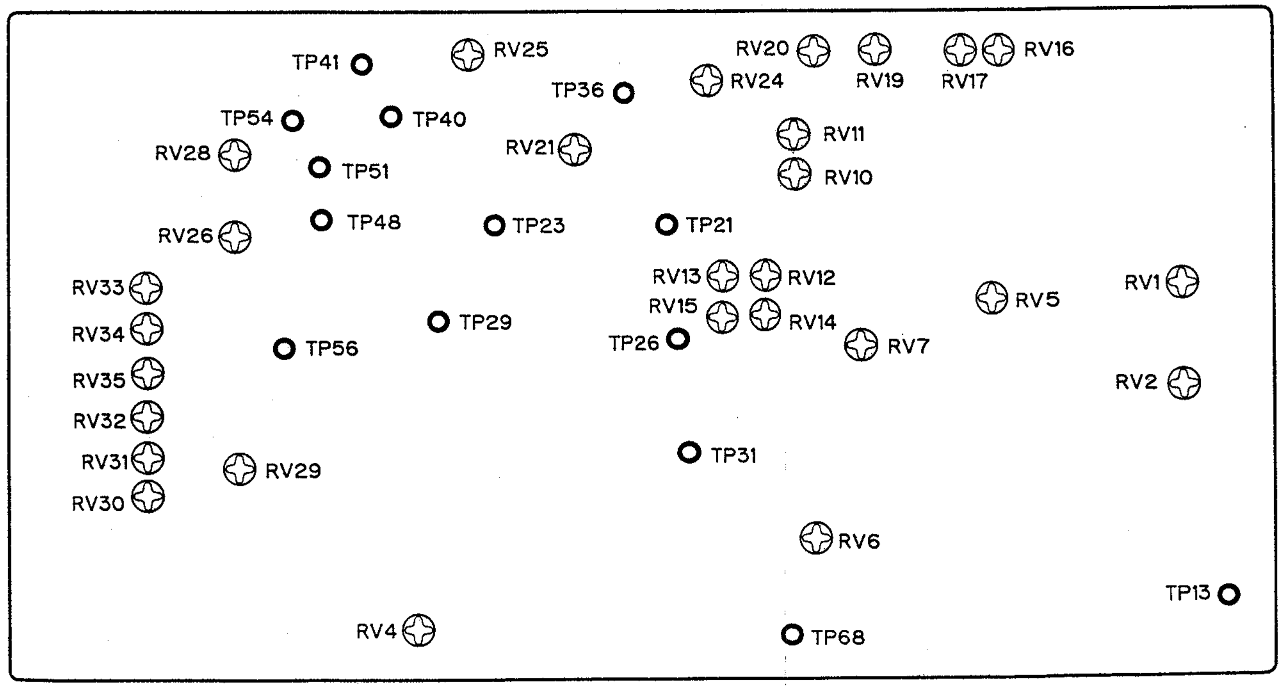
Condition when adjusting	Specification	Adjusting point
1. Terminate VIDEO OUT at 75-ohm. 2. Adjust V_1 to the specified value with RV30.	VIDEO OUT (75-ohm Terminated) V_1 = 1.00±0.02 Vp-p 	⊘RV30(E-11)/VA-5 (V-MONI. LEVEL)

4-19. Y-MONITOR LEVEL ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Terminate Y of Y/C OUT at 75-ohm. 2. Adjust V_1 to the specified value with RV31.	Y of Y/C OUT (75-ohm Terminated) V_1 = 1.00±0.02 Vp-p 	⊘RV31(E-11)/VA-5 (Y-MONI. LEVEL)

4-20. C-MONITOR LEVEL ADJUSTMENT

Condition when adjusting	Specification	Adjusting point
1. Terminate C of Y/C OUT at 75-ohm. 2. Adjust V_1 to the specified value with RV32.	C of Y/C OUT (75-ohm Terminated) V_1 = 286±10 mV 	⊘RV32(D-11)/VA-5 (C-MONI. LEVEL)

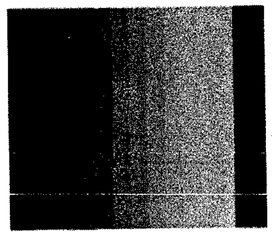

TP41
RV25
RV20
RV19
RV16
RV17
TP36
RV24
TP54
TP40
RV28
RV21
RV11
TP51
RV10
RV26
TP48
TP23
TP21
RV13
RV12
RV33
RV15
RV14
RV5
RV1
RV34
TP29
TP26
RV7
TP56
RV35
RV2
RV32
RV31
RV29
TP31
RV30
RV6
TP13
RV4
TP68

4-21. SERVICING MODE

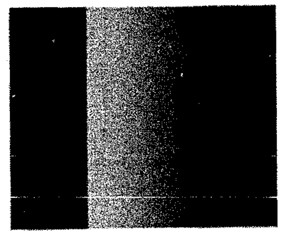
1. Turn on the power switch.
2. Enter the servicing mode by pressing MEMORY key while pressing STOP key.

Print samples of test pattern

(Step 12)



(RAMP)



(COLOUR BAR)

BETA(GRAY)

In servicing mode

***(Check of the platen motor)**

1. Rotates normally when pressing ◁ key.
2. Rotates reversely when pressing ▷ key.

***(Check of the head operation)**

1. Set the home position by pressing EXEC key.
2. The head position rises by one step when pressing △ key once.
   *Only when rising by four steps.
3. The head position falls by one step when pressing ▽ key once.

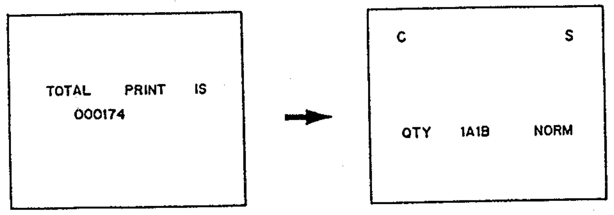
Note: Be sure not to change the position with △ and ▽ keys immediately after turning the power on.
The head may overrun.
Perform after returning to the home position with EXEC key.

***(Printing of the test pattern)**

1. Select the menu screen and set the cursor to INPUT SELECT.
2. The next menu is displayed by pressing ▽ key.
3. Printing of the test pattern starts when selecting the pattern with △ and ▽ keys and pressing EXEC key.
4. The number of prints is set by the normal menu.

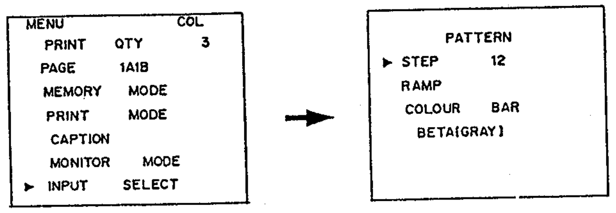
Entering the Service Mode

1. Turn on the power switch.
2. Press the MEMORY key while pressing the STOP key. Release the STOP key, then release the MEMORY key to enter the service mode.



* Service mode display on the monitor

* Press the MENU key and move the cursor to INPUT SELECT on the MENU screen using a ▽ key.



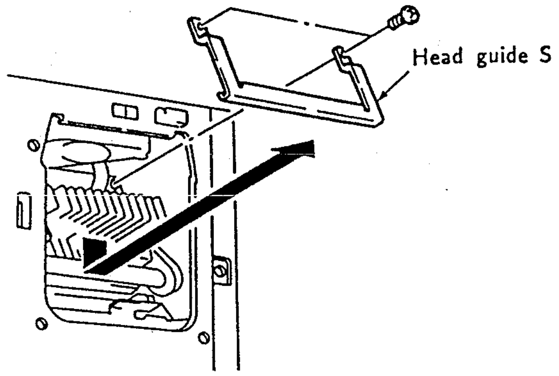
3. Select the test pattern to be printed using a ▽ key and press the EXEC key to enter the print operation.
4. The "STEP 12" and "RAMP" signal on the PATTERN display screen are not displayed on the monitor.

Thermal Head Replacement

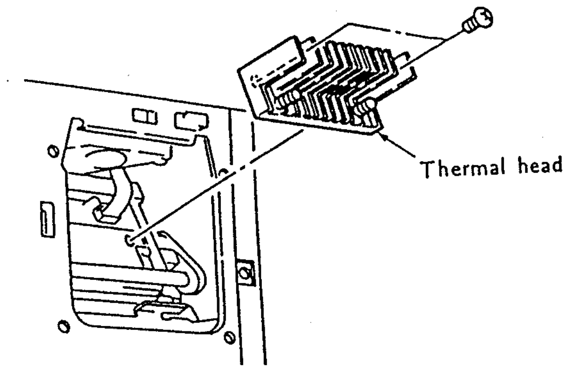
Preparation

* Be sure to print two sheets of PATTERN STEP 12 signals in the service mode before replacement.

1. Remove the back cover on the rear panel of the main unit.
2. Remove the head guide S.
   (Take care not to lose the spring at that time.)

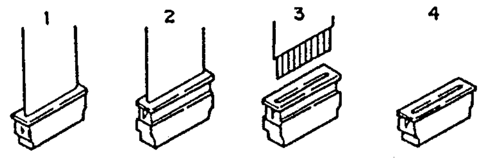


3. Remove the thermal head with the heat sink removed.

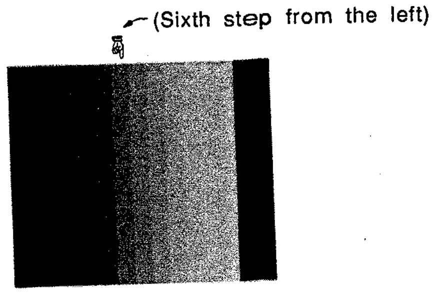


4. Disconnect the connector (flat wire), remove the heat sink, and replace the thermal head.

* How to disconnect the connector



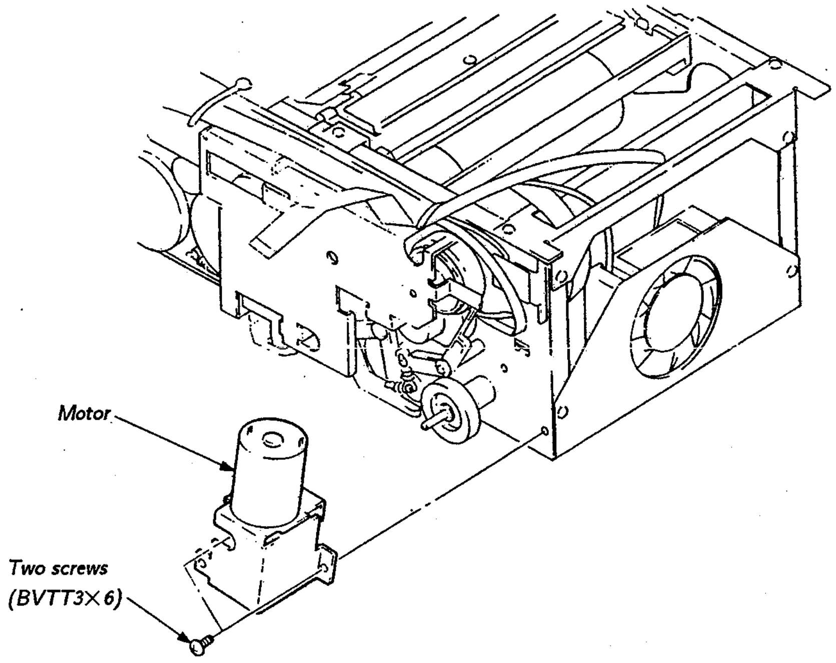
5. Print two sheets of PATTERN STEP 12 signals in the service mode after head replacement and adjust RV401 on the power board so that the density marked with ☞ is same.
   * Use the second sheet for print comparison.



SECTION 5
MECHANICAL ADJUSTMENTS

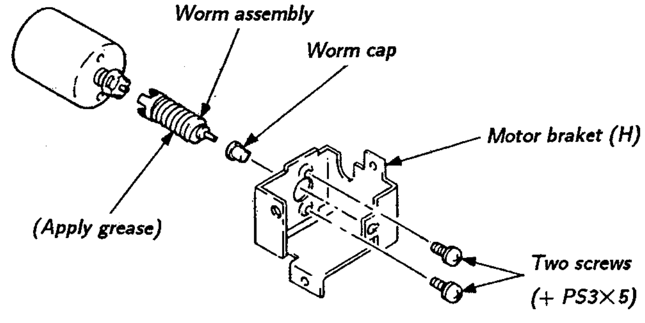
5-1. REPLACEMENT OF HEAD DRIVING MOTOR

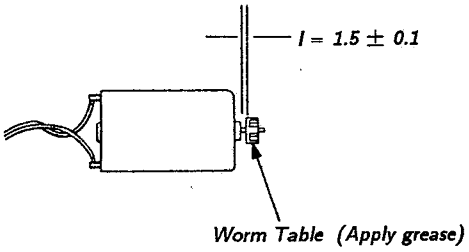
1) Remove the two screws and remove the head driving assembly.


Motor
Two screws
(BVTT3×6)

2) Remove the two screws and remove the motor from the motor bracket (H).
3) Replace the motor.

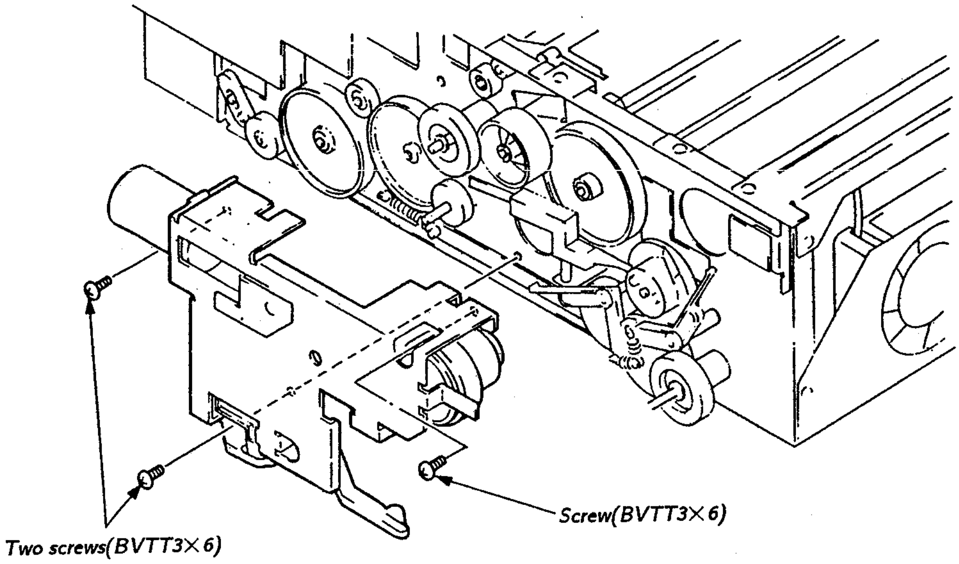
Note: Apply Sony grease (SGL-701)(7-662-010-08) to the worm and worm table during installation.


Worm assembly
Worm cap
Motor braket (H)
(Apply grease)
Two screws
(+ PS3×5)


l = 1.5 ± 0.1
Worm Table (Apply grease)

5-2. REPLACEMENT OF LIMITER ASSEMBLY

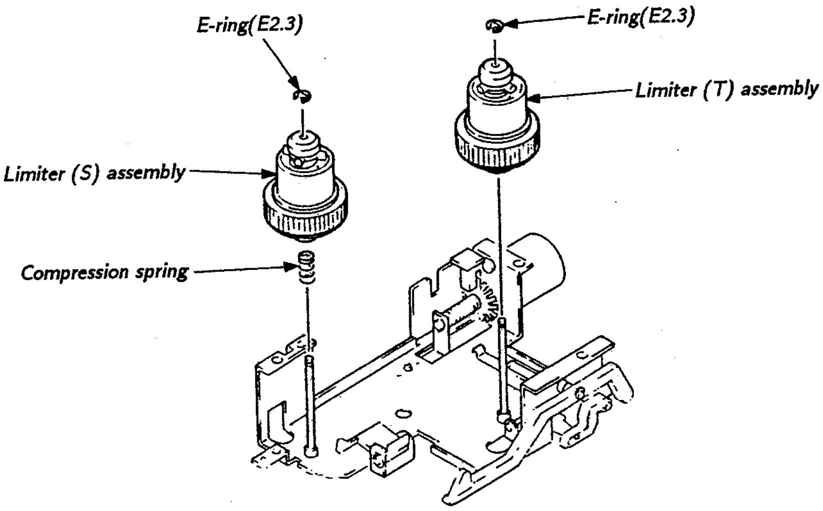
1) Remove the three screws and remove the motor bracket (P).
2) Disconnect the connector from the motor [CN1514] on the DUS-3 board.
3) Disconnect the connector from the SW-6 sensor [CN1504] on the DUS-3 board.


Screw(BVTT3×6)
Two screws(BVTT3×6)

Notes:

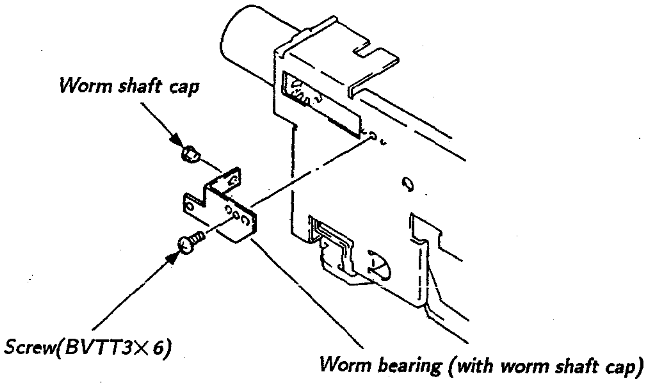
1. Be careful that the driver does not strike against the gear when the screw marked with ※ is removed.
2. Put the harness in the the notch during installation.

4) Remove the E-ring (E2.3), limiter (S) assembly and compression spring from the shaft in this order.
5) Remove the E-ring (E2.3) and limiter (T) assembly.


E-ring(E2.3)
E-ring(E2.3)
Limiter (T) assembly
Limiter (S) assembly
Compression spring

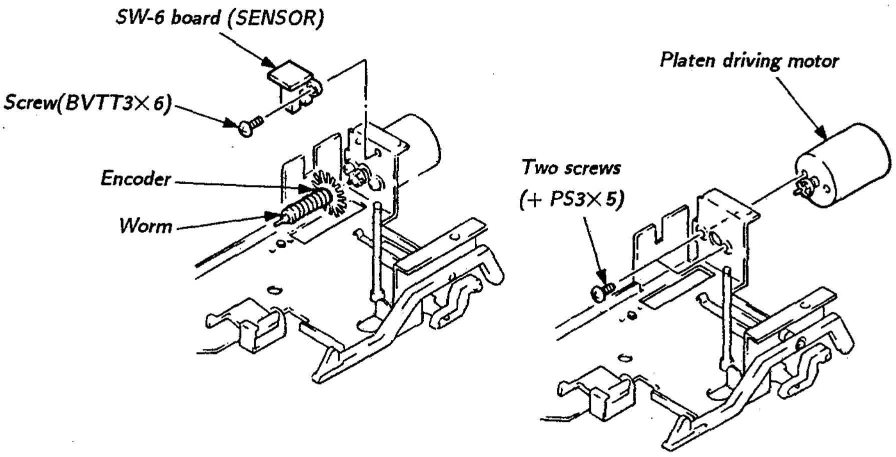
5-3. REPLACEMENT OF PLATEN DRIVING MOTOR

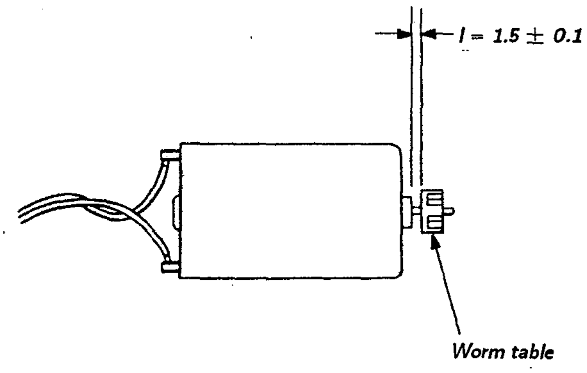
1) Replace the limiter (S) assembly as described in steps 1) to 4) of "5-2. Replacement of Limiter Assembly".
2) Remove the screw and remove the worm bearing with the worm shaft cap.


Worm shaft cap
Screw(BVTT3X 6)
Worm bearing (with worm shaft cap)

3) Remove the screw and remove the SY-6 board (Sensor), encoder and the worm.
4) Remove the two screws and remove the platen driving motor.

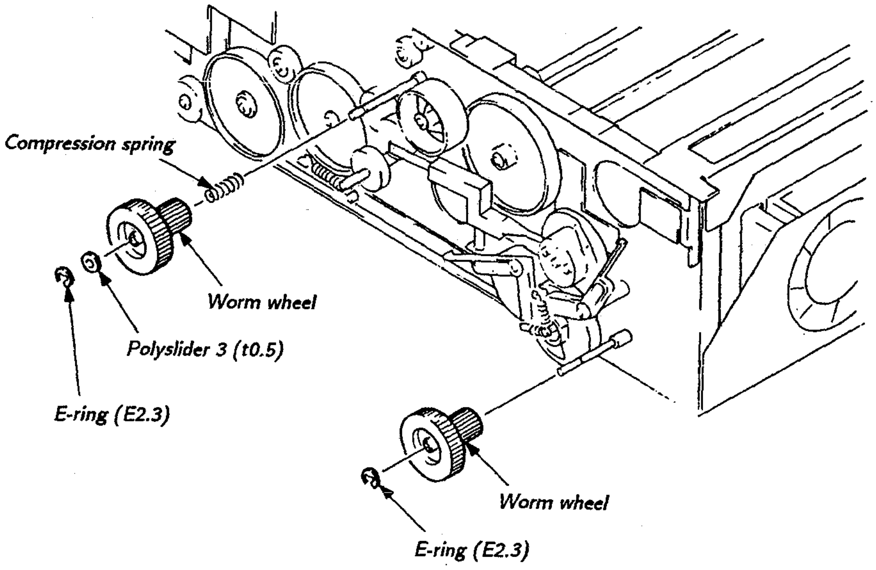
Note: Apply Sony grease (SGL-701)(7-662-010-08) to the worm and worm table.


SW-6 board (SENSOR)
Screw(BVTT3X 6)
Encoder
Worm
Platen driving motor
Two screws
(+ PS3X 5)

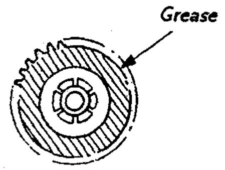

l = 1.5 ± 0.1
Worm table

5-4. REPLACEMENT OF WORM WHEEL

1) Remove the Head driving assembly. (refer to 5-1. step 1).)
2) Remove the motor bracket (P). (refer to 5-2. step 1).)
3)
   Side A
   Remove the E-ring (E2.3), washer 3 (t0.5), worm wheel, then compression spring.
   Side B
   Remove the E-ring (E2.3), then worm wheel.

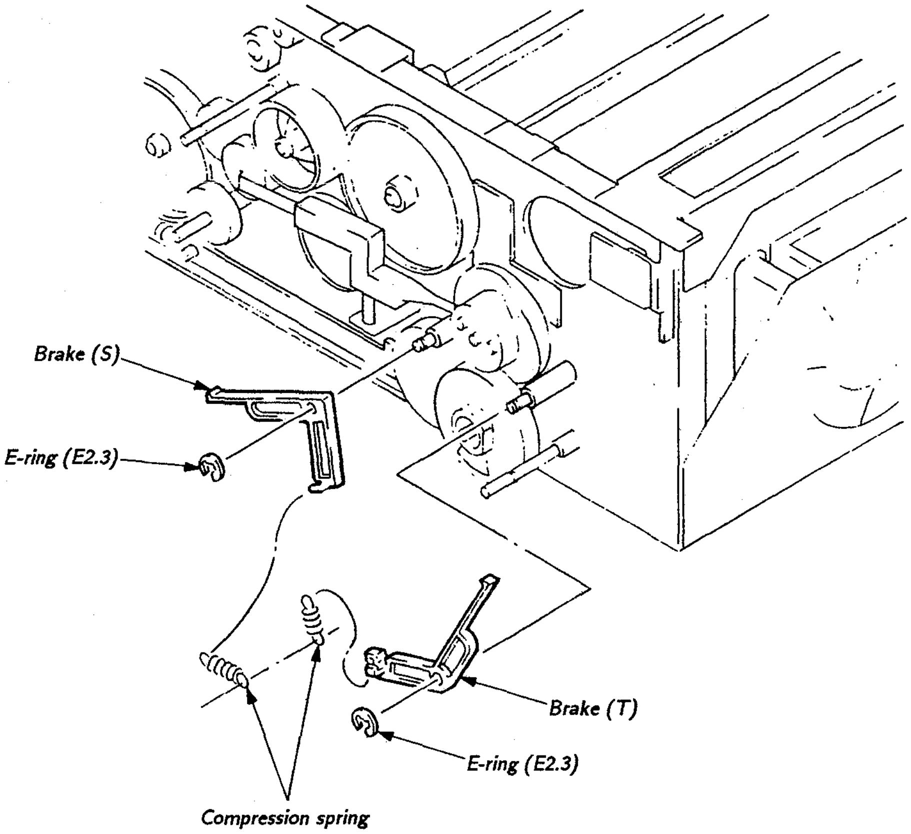

Compression spring
Worm wheel
Polyslider 3 (t0.5)
E-ring (E2.3)
Worm wheel
E-ring (E2.3)

Note: Apply Sony grease (SGL-701)(7-662-010-08) to the outside of the worm wheel on side A during installation as shown in the figure below.



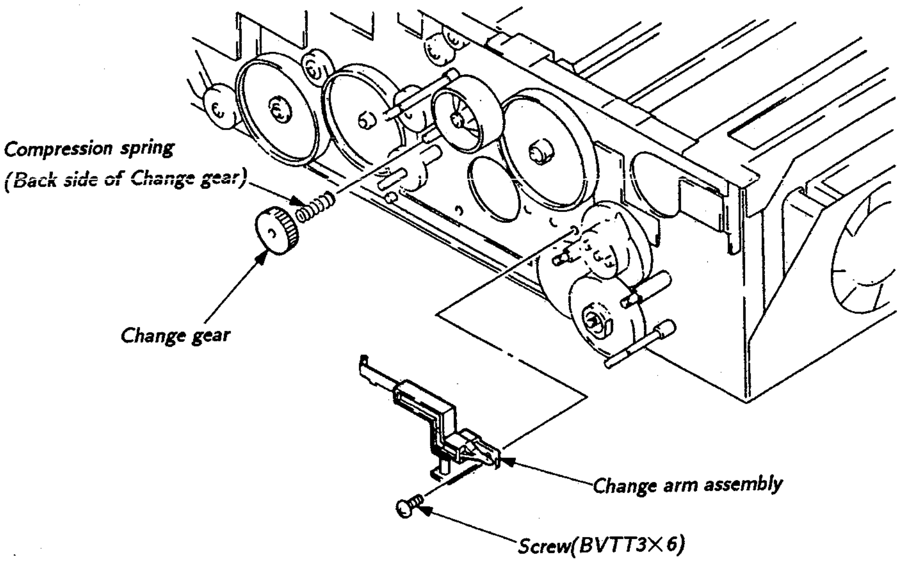
5-5. REPLACEMENT OF BRAKE

1) Remove the Head driving assembly. (refer to 5-1. step 1).)
2) Remove the motor bracket (P). (refer to 5-2. step 1).)
3) Remove the two E-rings (E2.3), two compression springs, brake (T), and brake (S)

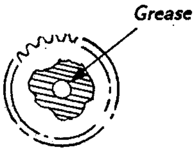

Brake (S)
E-ring (E2.3)
Brake (T)
E-ring (E2.3)
Compression spring

5-6. REPLACEMENT OF CHANGE GEAR

1) Remove the motor bracket (P). (refer to 5-2. step 1).)
2) Remove the brake (S). (refer to 5-5. step 3).)
3) Remove the screw, and remove the change arm assembly.
4) Remove the change gear and compression spring.

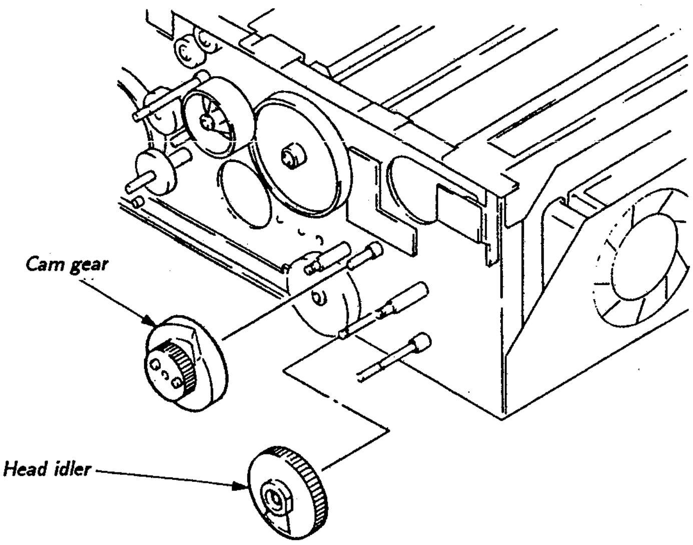

Compression spring
(Back side of Change gear)
Change gear
Change arm assembly
Screw(BVTT3X6)

Note: Apply Sony grease (SGL-701)(7-662-010-08) to the outside of the change gear (including a compression spring) during installation.



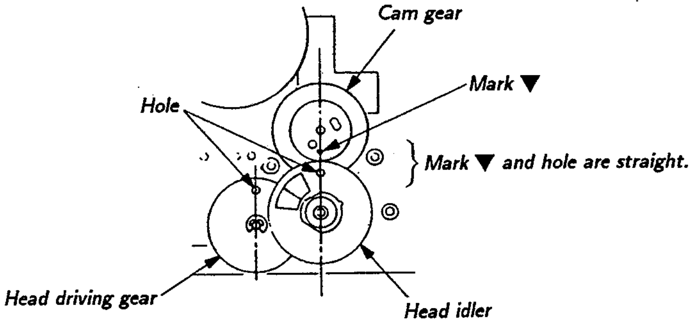
5-7. REPLACEMENT OF CAM GEAR, AND HEAD IDLER

1) Remove the Head driving assembly. (refer to 5-1. step 1).)
2) Remove the motor bracket (P). (refer to 5-2. step 1).)
3) Remove the worm wheel. (refer to 5-4. step 3).)
4) Remove the brake. (refer to 5-5.)
5) Remove the change arm. (refer to 5-6.)
6) Remove the head idler, then the cam gear.

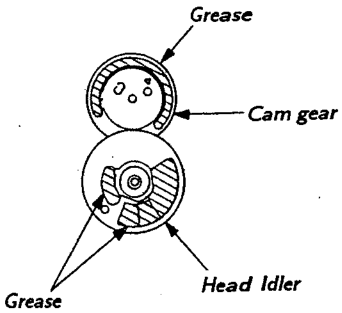

Cam gear
Head idler

Notes:

1. Turn the dead driving gear counterclockwise as shown in the figure below and set the hole so that it is vertical to the center during installation. Put the cam gear with mark ▼ down, then put the head idler so that the hole of head idler is straight with mark ▼ of the cam gear.

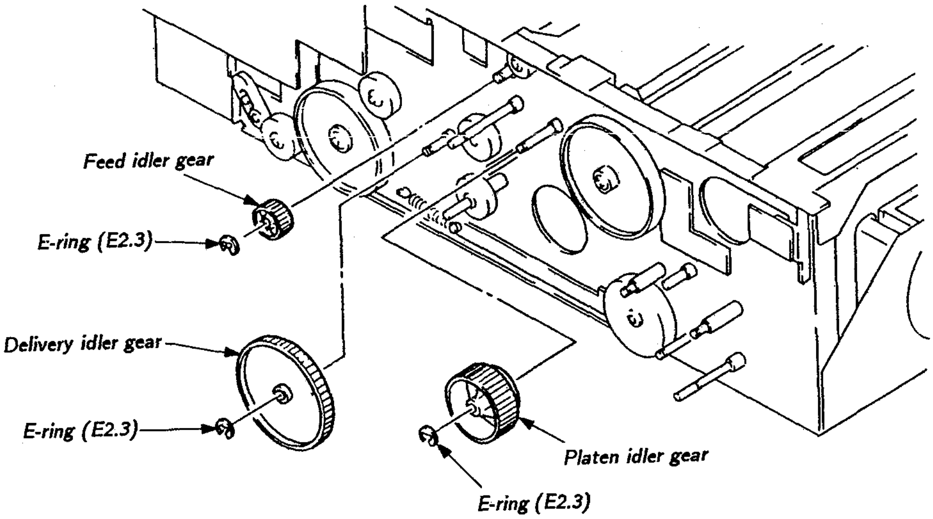

Cam gear
Mark ▼
Hole
Mark ▼ and hole are straight.
Head driving gear
Head idler

2. Apply Sony grease (SGL-701)(7-662-010-08) to the cam gear and the head idler.


Grease
Cam gear
Grease
Head Idler

5-8. REPLACEMENT OF IDLER GEAR

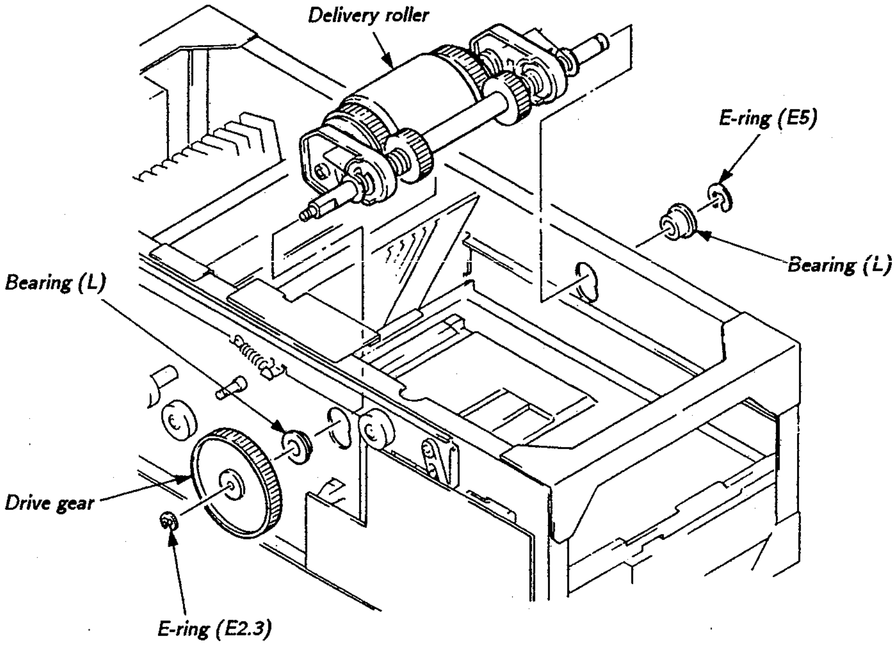
1) Remove the motor bracket (P). (refer to 5-2. step 1).)
2) Remove the worm wheel. (refer to 5-4. step 3).)
3) Remove the brake (S). (refer to 5-5. step 3).)
4) Remove the change arm assembly. (refer to 5-6. step 3).)
5) Remove the three E-rings (E2.3), delivery idler gear, feed idler gear and the platen idler gear.


Feed idler gear
E-ring (E2.3)
Delivery idler gear
E-ring (E2.3)
Platen idler gear
E-ring (E2.3)

Note: When installing the platen gear, make sure that do not hurt gear.

5-9. REPLACEMENT OF DELIVERY ROLLER ASSEMBLY

1) Remove the E-ring (E2.3), the driving gear and the bearing (L).
2) Remove the E-ring (E5), bearing (L) and delivery roller.



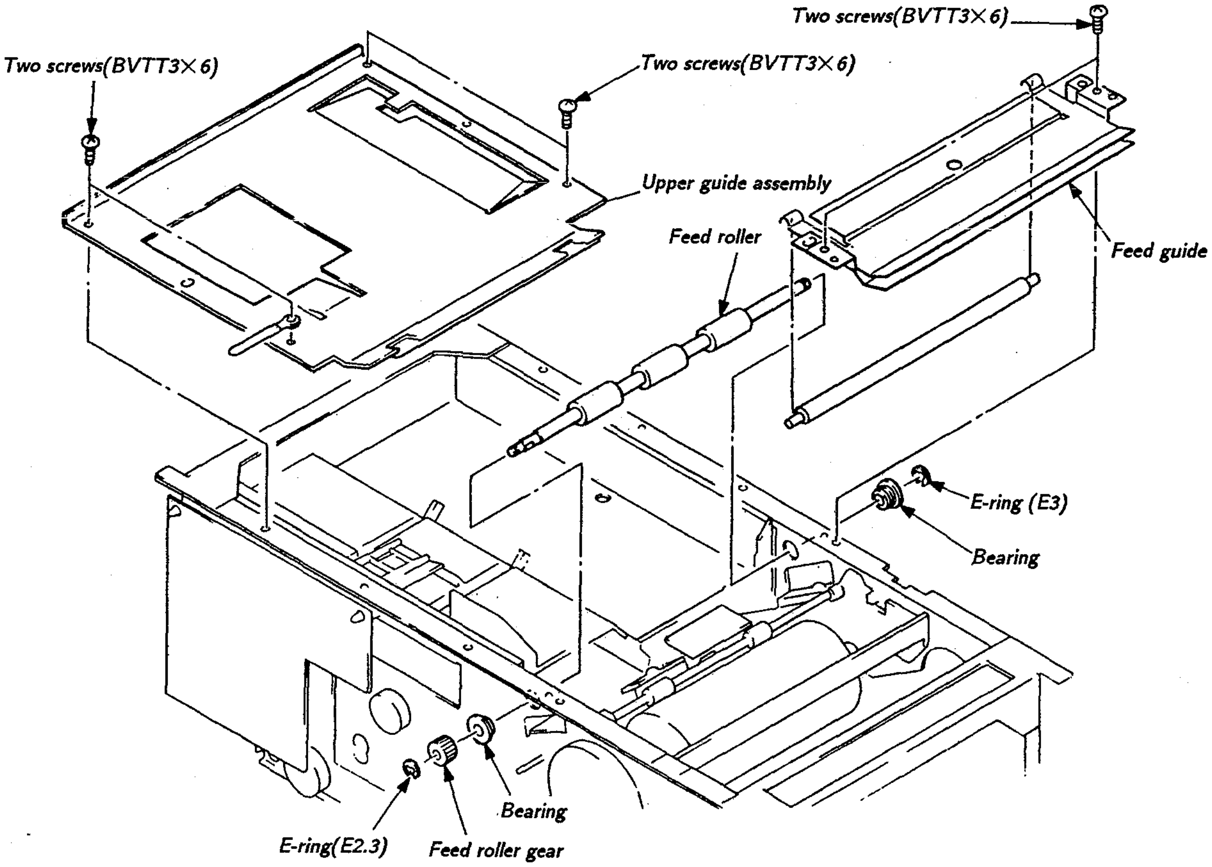
Delivery roller
E-ring (E5)
Bearing (L)
Bearing (L)
Drive gear
E-ring (E2.3)

Notes: Pay attention to the following during installation:

1. Do not touch the rubber portion of delivery roller.
2. Set rubber roller side of delivery roller to the fan.
3. Align the driving gear whth the D-cut portion, and insert it into the shaft.

5-10. REPLACEMENT OF FEED ROLLER

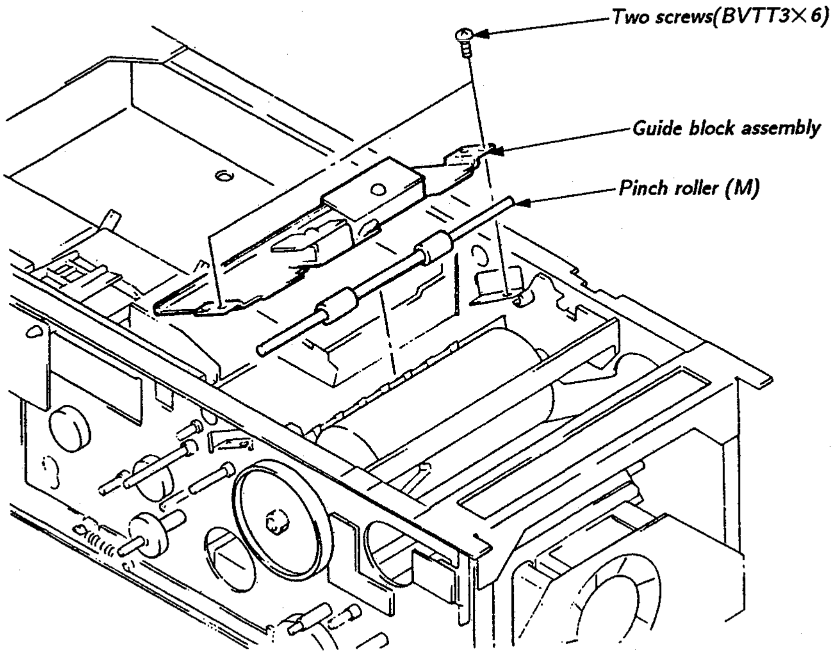
1) Remove the six screws, the upper guide assembly, and the paper feed guide.
2) Remove the E-ring (E2.3), feed roller gear, and bearing.
3) Remove the E-ring (E3), bearing, then feed roller.


Two screws(BVTT3X 6)
Two screws(BVTT3X 6)
Two screws(BVTT3X 6)
Upper guide assembly
Feed roller
Feed guide
E-ring (E3)
Bearing
Bearing
E-ring(E2.3)
Feed roller gear

Note: Align it with the D-cut portion when feed roller gear is inserted into the shaft during installation.

5-11. REPLACEMENT OF PLATEN

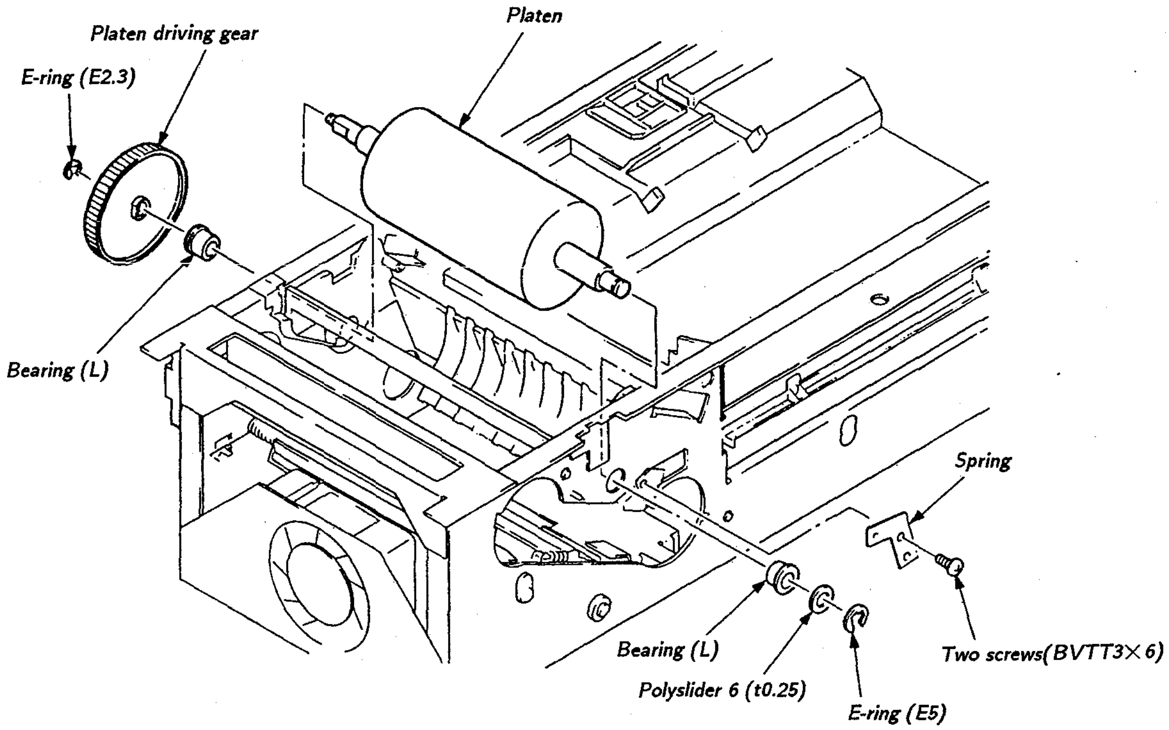
1) Remove the motor bracket (P). (refer to 5-2. step 1).)
2) Remove the worm wheel (side A). (refer to 5-4. step 3).)
3) Remove the brake (S). (refer to 5-5. step 3).)
4) Remove the change arm assembly. (refer to 5-6. step 3).)
5) Remove the platen idler gear. (refer to 5-8. step 5).)
6) Remove the two screws, and remove the guide block assembly.
7) Remove the pinch roller (M).


Two screws(BVTT3×6)
Guide block assembly
Pinch roller (M)

8) Remove the E-ring (E2.3), the platen driving gear, and bearing (L).

9) Remove the screw, and remove the spring.

10) Remove the E-ring (E5), washer 6 (t0.25), bearing (L), then platen.

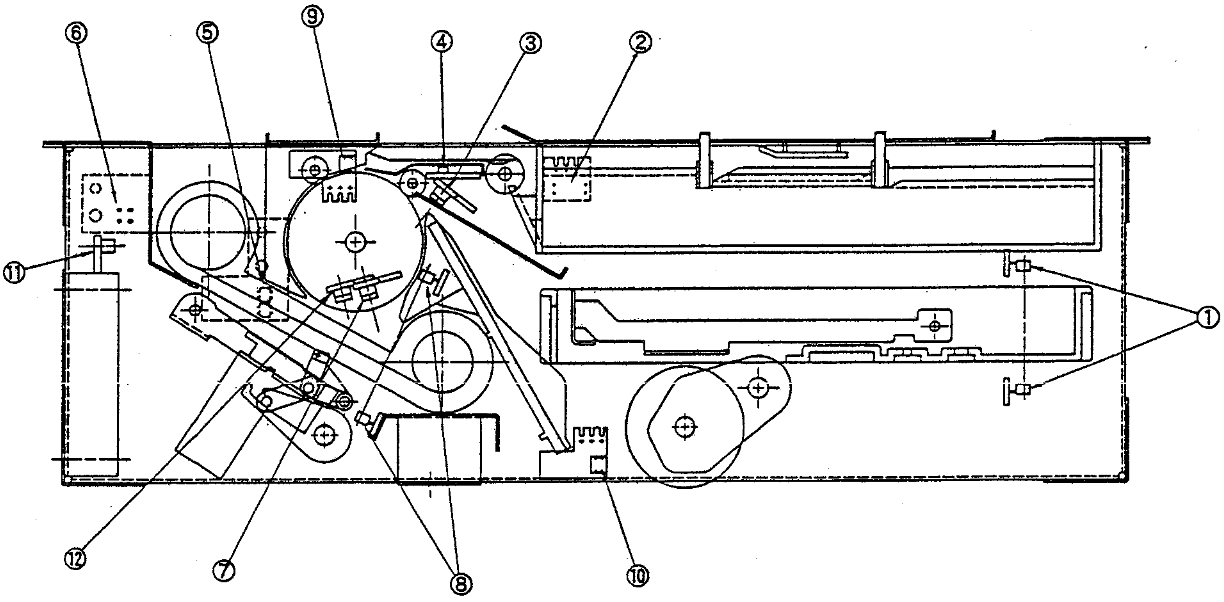

Platen driving gear
E-ring (E2.3)
Platen
Bearing (L)
Spring
Bearing (L)
Two screws(BVTT3X6)
Polyslider 6 (t0.25)
E-ring (E5)

Notes: Pay attention to the following during installation:

1. Remove the dust and dirt on the rubber portion of the platen.
2. Apply Sony grease (SGL-701)(7-662-010-08) to the gear, align the platen driving gear with the D-cut portion, then insert it into the shaft.

SECTION 6
SENSOR FUNCTIONS

6-1. SENSOR LOCATION



① Paper Tray Sensor	⑤ Cam, Home Sensor	⑨ Interlock Sensor (TOP)
② FG Sensor	⑥ Cartridge Sensor	⑩ Interlock Sensor (BOTTOM)
③ Delivery Sensor	⑦ Paper Set Sensor	⑪ Ribbon Select Sensor
④ Eject Sensor	⑧ Ribbon Sensor	⑫ Paper Select Sensor

SECTION 7
EXPLODED VIEWS

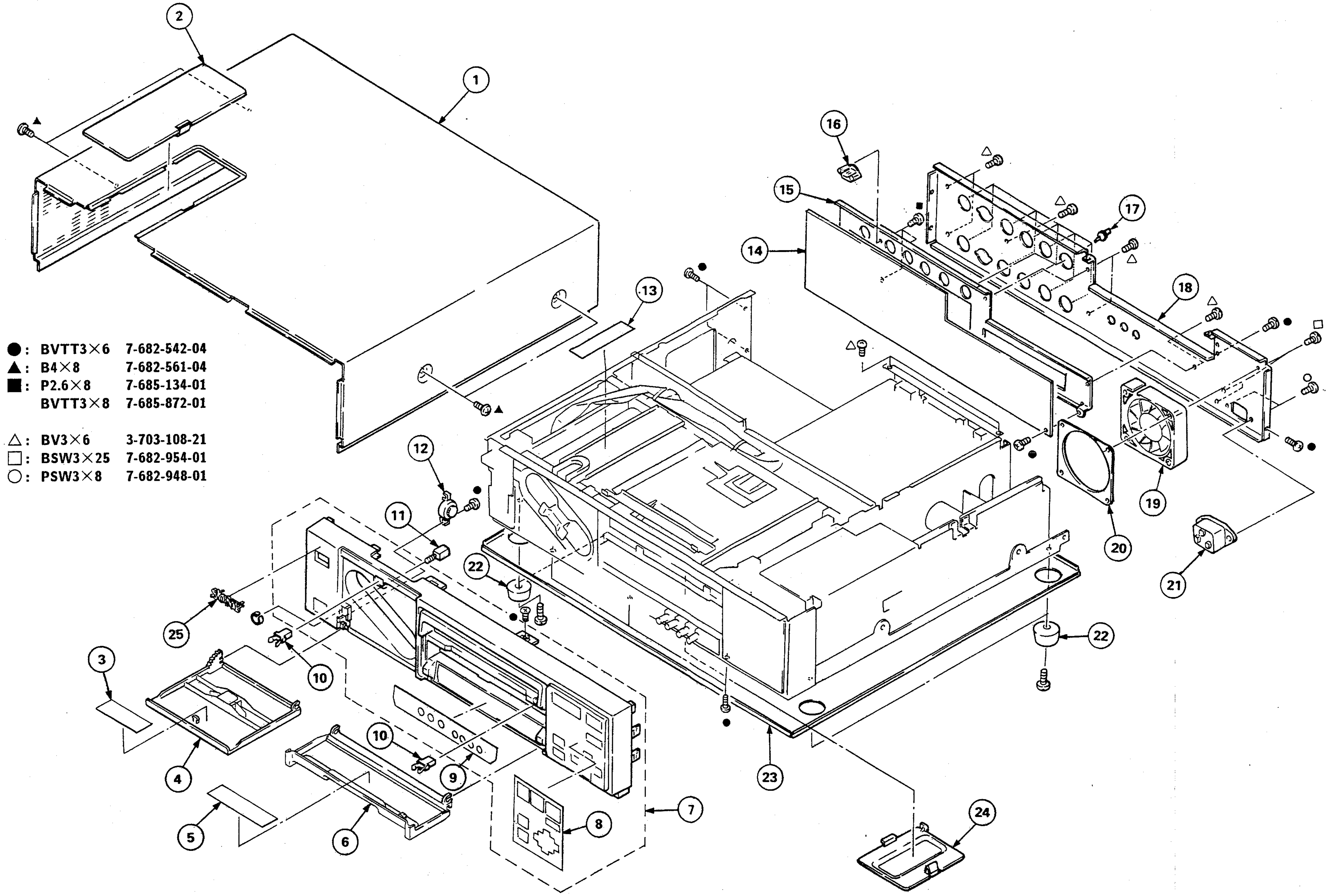
NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

7-1. CABINET

Ref.No	Part No.	Description	Remark
1	*3-745-740-01	COVER, TOP	
2	*3-737-950-12	LID, UPPER	
3	*3-745-754-01	LABEL (R), CAUTION	
4	X-3745-701-1	DOOR BLOCK ASSY, RIBBON	
5	*3-165-996-01	LABEL (V), CAUTION	
6	3-745-735-21	DOOR, PAPER	
7	X-3165-226-2	PANEL BLOCK ASSY, FRONT	
8	3-745-743-21	SHEET, CONTROL	
9	*3-166-277-01	SHEET, VL	
10	4-374-714-01	CATCH, PUSH	
11	1-507-195-21	SPECIAL REMOTE CONTROL JACK	
12	3-720-417-01	DAMPER, OIL	
13	3-742-114-01	LABEL (G), CAUTION	
14	*A-8271-066-A	IF-13 BOARD, COMPLETE	
15	*3-745-717-01	BRACKET, IF CONNECTOR	
16	1-569-803-11	CONNECTOR, (S) TERMINAL 4P	
17	1-562-261-41	CONNECTOR, COAXIAL (BNC)	
18	*3-745-722-01	FRAME, REAR	
19	1-541-684-12	MOTOR, DC (FAN) M1903	
20	*3-745-710-01	PLATE, FIXED, FAN	
21	⚠ 1-560-222-11	INLET 3P	
22	3-745-742-01	FOOT	
23	*3-745-741-01	COVER, BOTTOM	
24	*X-3737-803-1	LID BLOCK ASSY, LOWER	
25	3-718-322-01	EMBLEM, SONY	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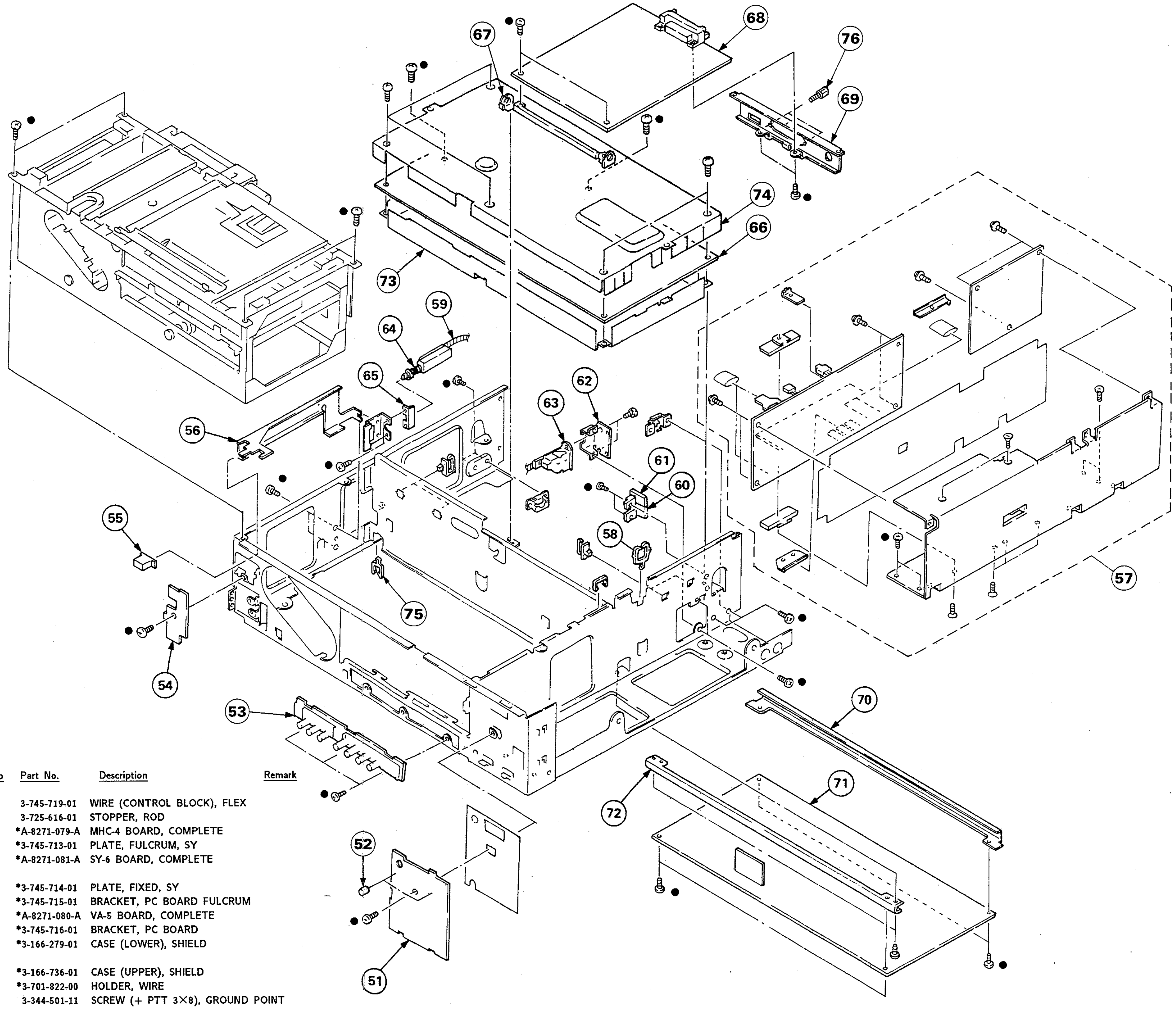
●:	BVTT3×6	7-682-542-04
▲:	B4×8	7-682-561-04
■:	P2.6×8	7-685-134-01
	BVTT3×8	7-685-872-01
△:	BV3×6	3-703-108-21
□:	BSW3×25	7-682-954-01
○:	PSW3×8	7-682-948-01

7-2. CHASSIS

●: BVTT3×6 7-682-547-04
BVTT3×8 7-685-872-09



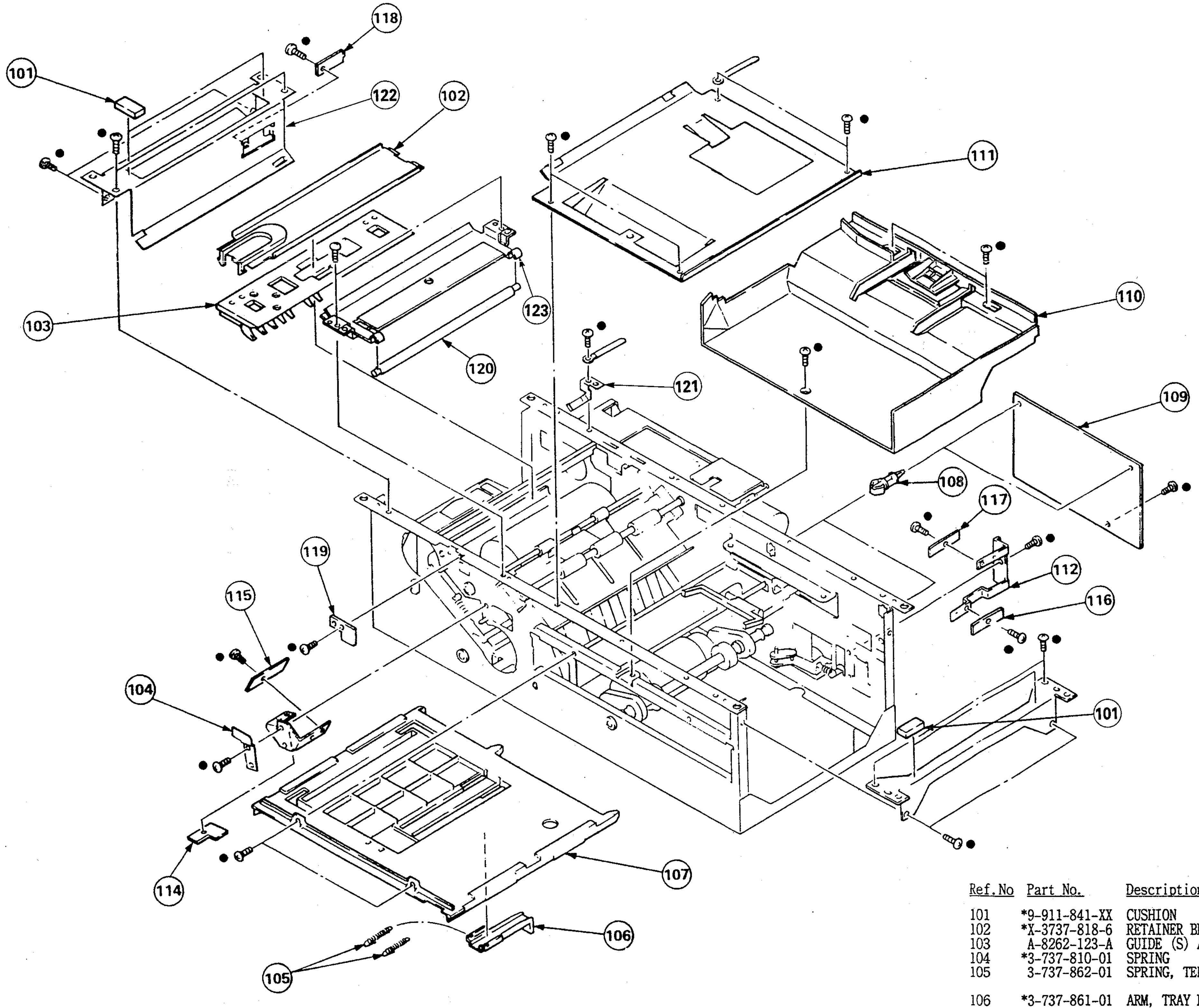
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Ref.No	Part No.	Description	Remark
51	*A-8276-111-A	KY-5 BOARD, COMPLETE	
52	3-745-707-01	HOLDER, LED	
53	*A-8276-127-A	DSC-4 BOARD, COMPLETE	
54	*A-8276-109-A	S-14 BOARD, COMPLETE	
55	2-431-568-31	BUTTON, POWER	
56	*3-745-720-01	BRACKET, PUSH	
57	⚠*1-413-580-11	REGULATOR, SWITCHING	
58	*4-308-119-00	HOLDER, WIRE	
59	3-745-718-01	WIRE, FLEX	
60	*1-634-729-12	DC-3 BOARD, COMPLETE	
61	*1-634-729-12	DC-2 BOARD, COMPLETE	
62	*3-745-708-01	HOLDER, SW	
63	⚠ A-8262-172-A	SWITCH, PUSH (AC POWER) (1KEY)	

Ref.No	Part No.	Description	Remark
64	3-745-719-01	WIRE (CONTROL BLOCK), FLEX	
65	3-725-616-01	STOPPER, ROD	
66	*A-8271-079-A	MHC-4 BOARD, COMPLETE	
67	*3-745-713-01	PLATE, FULCRUM, SY	
68	*A-8271-081-A	SY-6 BOARD, COMPLETE	
69	*3-745-714-01	PLATE, FIXED, SY	
70	*3-745-715-01	BRACKET, PC BOARD FULCRUM	
71	*A-8271-080-A	VA-5 BOARD, COMPLETE	
72	*3-745-716-01	BRACKET, PC BOARD	
73	*3-166-279-01	CASE (LOWER), SHIELD	
74	*3-166-736-01	CASE (UPPER), SHIELD	
75	*3-701-822-00	HOLDER, WIRE	
76	3-344-501-11	SCREW (+ PTT 3×8), GROUND POINT	

7-3. MECHANISM BLOCK (1)

●: BVTT3x6 7-682-547-04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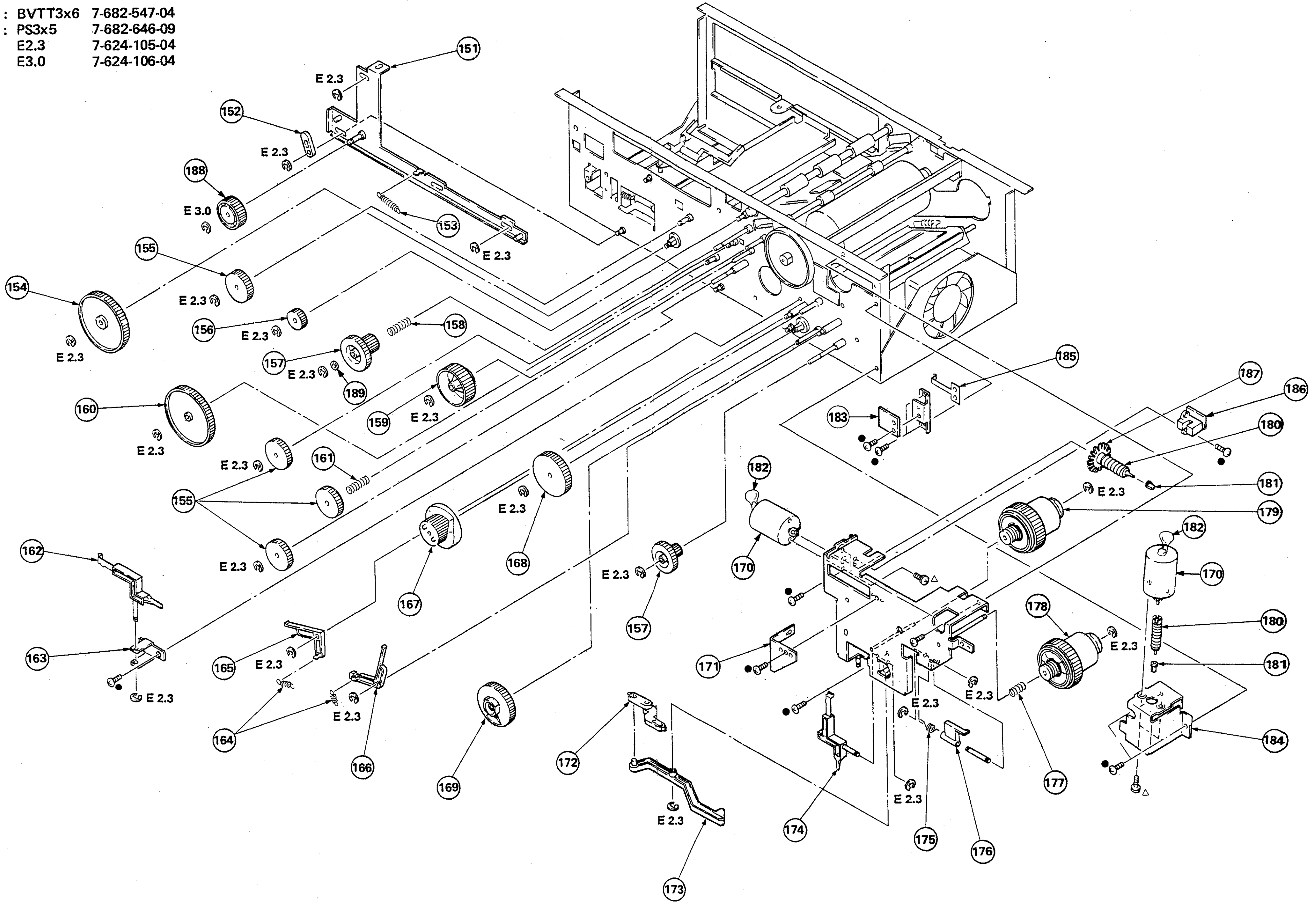
Ref.No	Part No.	Description	Remark
101	*9-911-841-XX	CUSHION	
102	*X-3737-818-6	RETAINER BLOCK ASSY, GUIDE (S)	
103	A-8262-123-A	GUIDE (S) ASSY	
104	*3-737-810-01	SPRING	
105	3-737-862-01	SPRING, TENSION	
106	*3-737-861-01	ARM, TRAY EJECT	
107	*X-3737-829-1	GUIDE BLOCK ASSY, TRAY	
108	*3-680-767-00	SUPPORT, PC	
109	*A-8276-098-A	DUS-3 BOARD, COMPLETE	
110	*3-737-961-01	TRAY	
111	*A-8262-155-A	GUIDE ASSY, UPPER	
113	*3-697-580-01	SHEET, CUSHION	
114	*1-634-712-12	SW-14 BOARD	
115	*1-634-725-12	PTC-14 BOARD	
116	*1-634-724-12	PTC-13 BOARD	
117	*1-634-726-12	PTC-15 BOARD	
118	*1-634-721-12	SW-21 BOARD	
119	*1-634-719-12	SW-19 BOARD	
120	3-737-848-01	ROLLER, RIBBON	
121	3-737-812-02	STOPPER, RIBBON	
122	*3-737-947-02	GUIDE (T), RIBBON	
123	X-3737-819-7	GUIDE BLOCK ASSY	

7-4. MECHANISM BLOCK (2)

● :	BVTT3x6	7-682-547-04
△ :	PS3x5	7-682-646-09
	E2.3	7-624-105-04
	E3.0	7-624-106-04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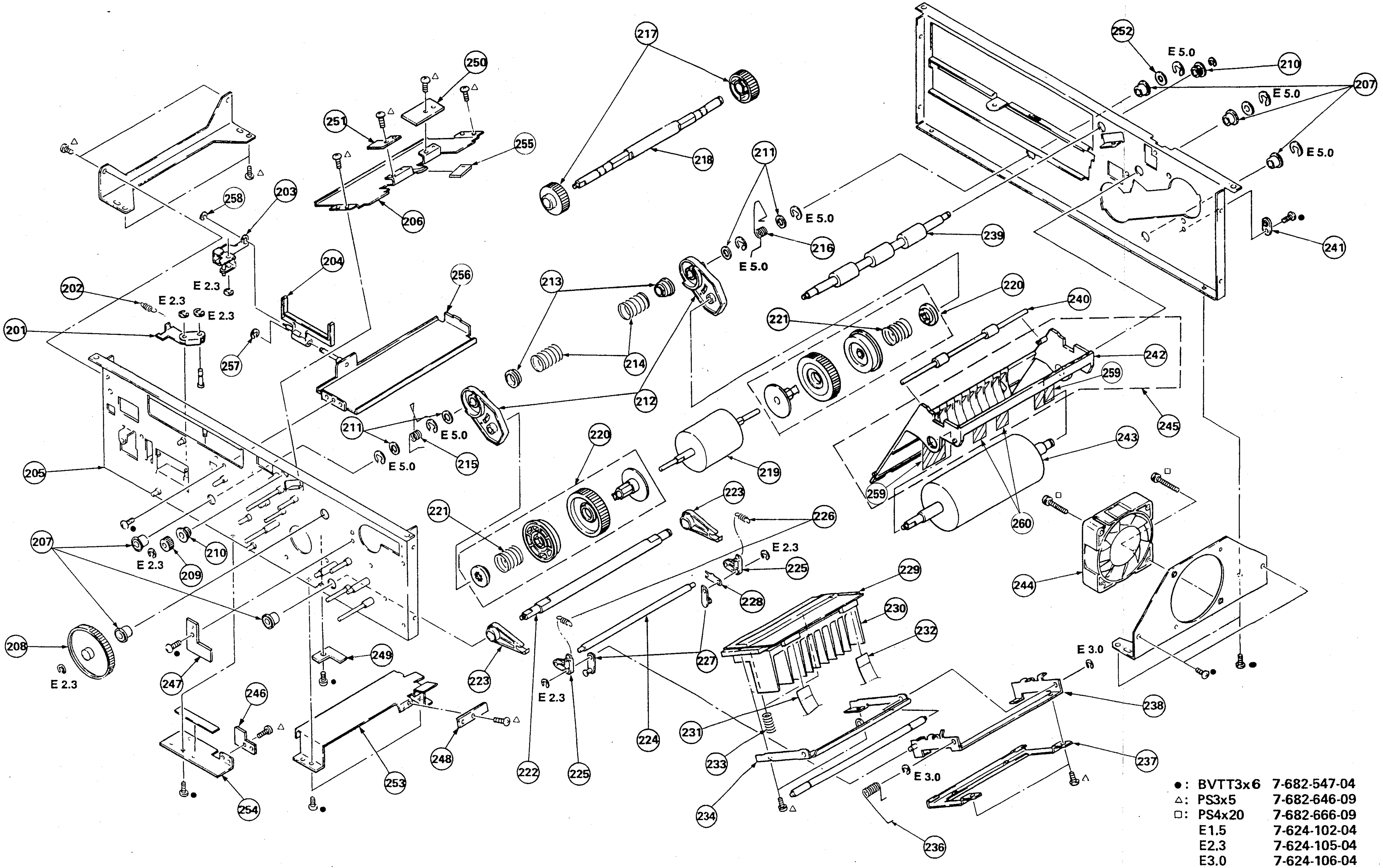
Ref.No	Part No.	Description	Remark
151	*X-3737-825-1	LINK BLOCK ASSY	
152	3-737-827-01	PLATE, STOP, PUSH	
153	3-737-914-01	SPRING, TENSION	
154	3-737-813-01	GEAR, DRIVING	
155	3-737-817-01	GEAR, CHANGE	
156	3-737-815-01	GEAR, IDLER	
157	3-737-818-01	WHEEL, WORM	
158	3-737-816-01	SPRING, COMPRESSION	
159	3-737-814-01	GEAR, IDLER	
160	3-737-823-01	GEAR, IDLER	
161	3-737-819-01	SPRING, COMPRESSION	
162	X-3737-808-1	ARM (A) BLOCK AASY, CHANGE	
163	*3-737-870-01	BEARING, CHANGE ARM	
164	3-737-822-01	SPRING, TENSION	
165	3-737-821-01	BRAKE (T)	
166	3-737-820-01	BRAKE (S)	
167	X-3737-802-1	GEAR BLOCK ASSY, CAM	
168	3-737-807-01	GEAR, HEAD DRIVING	
169	3-737-922-01	IDLER, HEAD	
170	A-8262-171-A	MOTOR ASSY	
171	*3-737-978-01	BEARING, WORM	
172	3-737-876-01	ARM (S), PLATEN RELEASE	
173	X-3737-809-1	ARM BLOCK ASSY, RELEASE	
174	X-3737-810-1	ARM (B) BLOCK ASSY, CHANGE	
175	3-737-875-01	SPRING	
176	3-737-878-01	LOCK, LIMITER	
177	3-737-881-01	SPRING, COMPRESSION	
178	*A-8262-119-A	LIMITER (S) ASSY	
179	*A-8262-120-B	LIMITER (T) ASSY	
180	X-3737-811-1	WORM BLOCK ASSY	
181	3-737-880-01	CAP, WORM SHAFT	
182	1-161-772-11	CAP, CERAMIC 0.1MF X	
183	*1-634-711-12	S-15 BOARD	
184	3-737-934-01	BRACKET (H), MOTOR	
185	3-737-824-03	SPRING	
186	*1-634-714-12	SW-16 BOARD	
187	3-745-706-01	ENCORDER	
188	3-737-985-01	GEAR, CLUTCH	
189	3-701-439-11	WASHER	

7-5. MECHANISM BLOCK (3)

Ref.No	Part No.	Description	Remark
201	*A-8262-101-A	PLATE ASSY, LOCK	
202	3-737-826-01	SPRING, TENSION	
203	*X-3737-804-1	LINK BLOCK ASSY, ARM	
204	X-3737-807-1	ARM BLOCK ASSY	
205	*X-3737-822-4	PLATE (U) BLOCK ASSY, SIDE	
206	*X-3737-815-3	GUIDE BLOCK ASSY	
207	3-737-805-01	BEARING (LEFT)	
208	3-737-806-01	GEAR, DRIVING	
209	3-737-811-01	GEAR, ROLLER	
210	2-430-460-02	BEARING	
211	3-701-444-11	WASHER, 6	
212	3-737-981-01	ARM, PAPER ROLLER	
213	X-3737-828-1	HOUSING BLOCK ASSY	
214	3-737-990-01	SPRING, COMPRESSION	
215	3-737-986-03	SPRING(RIGHT), TORSION	
216	3-737-987-03	SPRING(LEFT), TORSION	
217	3-737-982-01	GEAR, DRIVING SHAFT	
218	3-737-991-01	SHAFT, DRIVING, ROLLER	
219	3-737-992-01	ROLLER, PAPER	
220	A-8262-125-A	LIMITER ASSY	
221	3-737-988-01	SPRING, COMPRESSION	
222	3-737-925-02	SHAFT, HEAD DRIVING	
223	3-725-688-01	ARM (A), HEAD U/D	
224	*3-737-848-11	ROLLER, RIBBON	
225	3-737-849-01	ARM, RIBBON ROLLER	
226	3-737-850-01	SPRING, TENSION	
227	*X-3737-805-1	ARM BLOCK ASSY, HEAD DRIVING	
228	3-737-852-02	PLATE, GROUND, ROLLER	
229	1-543-774-11	HEAD, THERMAL (TH66207)	
230	*3-742-101-01	HEAT SINK	
231	1-575-855-11	WIRE, FLAT (FCC.CON) (10 CORE)	
232	1-575-854-11	WIRE, FLAT (FCC.CON) (8 CORE)	
233	3-737-975-01	SPRING, COMPRESSION	
234	*3-737-976-01	GUIDE (S), HEAD	
236	X-3737-808-1	ARM (A) BLOCK AASY, CHANGE	
237	*3-737-926-01	RETAINER, SPRING HEAD	
238	*X-3737-817-1	GUIDE (M) BLOCK ASSY, HEAD	
239	3-737-921-01	ROLLER	
240	3-737-920-01	PINCH ROLLER (M)	
241	X-3737-809-1	ARM BLOCK ASSY, RELEASE	
242	*3-737-977-04	GUIDE (M)	
243	3-742-102-02	PLATEN	
244	1-541-684-12	MOTOR, DC	
245	*X-3745-702-3	GUIDE (M) BLOCK ASSY	
246	*1-634-720-12	SW-20 BOARD	
247	*1-634-715-12	SW-17 BOARD	
248	*1-634-723-12	PTC-12 BOARD	
249	*1-634-722-12	SW-22 BOARD	
250	*1-634-713-12	SW-15 BOARD	
251	*1-634-716-12	SW-18 BOARD	
252	3-701-444-21	WASHER, 6	
253	*3-737-924-01	GUIDE (B), RIBBON	
254	*X-3737-806-1	STOPPER BLOCK ASSY, ARM	
255	3-737-865-03	COVER, PINCH ROLLER SPRING (M)	
256	X-3737-816-1	SUPPORT BLOCK ASSY	
257	3-669-596-00	WASHER (2.3), STOPPER	
258	3-669-465-00	WASHER (1.5), STOPPER	
259	3-745-732-02	GUIDE (L), FLEXIBLE	
260	3-745-733-02	GUIDE (S), FLEXIBLE	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●:	BVTT3x6	7-682-547-04
△:	PS3x5	7-682-646-09
□:	PS4x20	7-682-666-09
	E1.5	7-624-102-04
	E2.3	7-624-105-04
	E3.0	7-624-106-04
	E5.0	7-624-109-04

SECTION 8
ELECTRICAL PARTS LIST

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

Ref.No.	Part No.	Description			Remark
	*A-8271-066-A	COMPLETE PCB, IF-13 ********************			

CAPACITORS

Ref.No.	Part No.	Description			Remark
C701	1-126-157-11	ELECT	10MF	20%	16V
C702	1-126-157-11	ELECT	10MF	20%	16V
C703	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C704	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C705	1-126-157-11	ELECT	10MF	20%	16V
C706	1-126-157-11	ELECT	10MF	20%	16V
C707	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C708	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C709	1-124-584-00	ELECT	100MF	20%	10V
C710	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C711	1-124-589-11	ELECT	47MF	20%	16V
C712	1-124-584-00	ELECT	100MF	20%	10V
C713	1-124-360-00	ELECT	1000MF	20%	16V
C714	1-124-360-00	ELECT	1000MF	20%	16V
C715	1-126-157-11	ELECT	10MF	20%	16V
C716	1-126-157-11	ELECT	10MF	20%	16V
C717	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C718	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C719	1-126-157-11	ELECT	10MF	20%	16V
C720	1-126-157-11	ELECT	10MF	20%	16V
C721	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C722	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C723	1-124-584-00	ELECT	100MF	20%	10V
C724	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C725	1-124-589-11	ELECT	47MF	20%	16V
C726	1-124-584-00	ELECT	100MF	20%	10V
C727	1-124-360-00	ELECT	1000MF	20%	16V
C728	1-124-360-00	ELECT	1000MF	20%	16V
C729	1-126-157-11	ELECT	10MF	20%	16V
C730	1-126-157-11	ELECT	10MF	20%	16V
C731	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C732	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C733	1-126-157-11	ELECT	10MF	20%	16V
C734	1-126-157-11	ELECT	10MF	20%	16V
C735	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C736	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C737	1-124-584-00	ELECT	100MF	20%	10V
C738	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C739	1-124-589-11	ELECT	47MF	20%	16V
C740	1-124-584-00	ELECT	100MF	20%	10V
C741	1-124-360-00	ELECT	1000MF	20%	16V
C742	1-124-360-00	ELECT	1000MF	20%	16V
C743	1-126-157-11	ELECT	10MF	20%	16V
C744	1-126-157-11	ELECT	10MF	20%	16V
C745	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C746	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C747	1-124-584-00	ELECT	100MF	20%	10V
C748	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C749	1-124-589-11	ELECT	47MF	20%	16V
C750	1-124-360-00	ELECT	1000MF	20%	16V
C751	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C752	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C753	1-124-589-11	ELECT	47MF	20%	16V
C754	1-124-589-11	ELECT	47MF	20%	16V
C755	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C756	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C757	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C758	1-163-038-00	CERAMIC CHIP	0.1MF		25V

CONNECTORS

Ref.No.	Part No.	Description	Remark
CN702	*1-564-018-51	PIN, CONNECTOR 8P	
CN703	*1-506-485-11	PIN, CONNECTOR 6P	
CN704	*1-564-018-61	PIN, CONNECTOR 8P	
CN705	*1-564-016-71	PIN, CONNECTOR 6P	

DIODES

Ref.No.	Part No.	Description	Remark
D701	8-719-800-76	DIODE 1SS226	
D702	8-719-800-76	DIODE 1SS226	
D703	8-719-800-76	DIODE 1SS226	
D704	8-719-800-76	DIODE 1SS226	
D705	8-719-800-76	DIODE 1SS226	
D706	8-719-800-76	DIODE 1SS226	
D707	8-719-800-76	DIODE 1SS226	
D708	8-719-106-70	DIODE RD12M-B1	
D709	8-719-106-70	DIODE RD12M-B1	
D710	8-719-106-70	DIODE RD12M-B1	
D711	8-719-106-70	DIODE RD12M-B1	
D712	8-719-106-70	DIODE RD12M-B1	
D713	8-719-106-70	DIODE RD12M-B1	
D714	8-719-106-70	DIODE RD12M-B1	

FILTERS

Ref.No.	Part No.	Description	Remark
FL701	1-236-619-21	FILTER, LOW PASS	
FL702	1-236-619-21	FILTER, LOW PASS	
FL703	1-236-619-21	FILTER, LOW PASS	
FL704	1-236-619-21	FILTER, LOW PASS	
FL705	1-236-619-21	FILTER, LOW PASS	
FL706	1-236-619-21	FILTER, LOW PASS	
FL707	1-236-619-21	FILTER, LOW PASS	
FL708	1-236-619-21	FILTER, LOW PASS	
FL709	1-236-619-21	FILTER, LOW PASS	
FL710	1-236-619-21	FILTER, LOW PASS	
FL711	1-236-619-21	FILTER, LOW PASS	
FL712	1-236-619-21	FILTER, LOW PASS	
FL713	1-236-619-21	FILTER, LOW PASS	
FL714	1-236-619-21	FILTER, LOW PASS	

IC

Ref.No.	Part No.	Description	Remark
IC701	8-759-710-86	IC NJM2233BM	
IC702	8-759-710-86	IC NJM2233BM	
IC703	8-759-037-41	IC MC14577AF	
IC704	8-759-710-86	IC NJM2233BM	
IC705	8-759-710-86	IC NJM2233BM	

Ref.No.	Part No.	Description	Remark
IC706	8-759-037-41	IC MC14577AF	
IC707	8-759-710-86	IC NJM2233BM	
IC708	8-759-710-86	IC NJM2233BM	
IC709	8-759-037-41	IC MC14577AF	
IC710	8-759-710-86	IC NJM2233BM	
IC711	8-759-037-41	IC MC14577AF	
IC712	8-759-982-13	IC RC7812FA	

RESISTORS

Ref.No.	Part No.	Description			Remark
R701	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R702	1-216-025-00	METAL GLAZE	100	5%	1/10W
R703	1-216-029-00	METAL GLAZE	150	5%	1/10W
R704	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R705	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R706	1-216-025-00	METAL GLAZE	100	5%	1/10W
R707	1-216-029-00	METAL GLAZE	150	5%	1/10W
R708	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R709	1-216-041-00	METAL GLAZE	470	5%	1/10W
R710	1-216-047-00	METAL GLAZE	820	5%	1/10W
R711	1-216-025-00	METAL GLAZE	100	5%	1/10W
R712	1-216-025-00	METAL GLAZE	100	5%	1/10W
R713	1-216-025-00	METAL GLAZE	100	5%	1/10W
R714	1-216-025-00	METAL GLAZE	100	5%	1/10W
R715	1-216-047-00	METAL GLAZE	820	5%	1/10W
R716	1-216-041-00	METAL GLAZE	470	5%	1/10W
R717	1-216-029-00	METAL GLAZE	150	5%	1/10W
R718	1-216-029-00	METAL GLAZE	150	5%	1/10W
R719	1-216-029-00	METAL GLAZE	150	5%	1/10W
R720	1-216-029-00	METAL GLAZE	150	5%	1/10W
R721	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R722	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R723	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R724	1-216-025-00	METAL GLAZE	100	5%	1/10W
R725	1-216-029-00	METAL GLAZE	150	5%	1/10W
R726	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R727	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R728	1-216-025-00	METAL GLAZE	100	5%	1/10W
R729	1-216-029-00	METAL GLAZE	150	5%	1/10W
R730	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R731	1-216-041-00	METAL GLAZE	470	5%	1/10W
R732	1-216-047-00	METAL GLAZE	820	5%	1/10W
R733	1-216-025-00	METAL GLAZE	100	5%	1/10W
R734	1-216-025-00	METAL GLAZE	100	5%	1/10W
R735	1-216-025-00	METAL GLAZE	100	5%	1/10W
R736	1-216-025-00	METAL GLAZE	100	5%	1/10W
R737	1-216-047-00	METAL GLAZE	820	5%	1/10W
R738	1-216-041-00	METAL GLAZE	470	5%	1/10W
R739	1-216-029-00	METAL GLAZE	150	5%	1/10W
R740	1-216-029-00	METAL GLAZE	150	5%	1/10W
R741	1-216-029-00	METAL GLAZE	150	5%	1/10W
R742	1-216-029-00	METAL GLAZE	150	5%	1/10W
R743	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R744	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R745	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R746	1-216-025-00	METAL GLAZE	100	5%	1/10W
R747	1-216-029-00	METAL GLAZE	150	5%	1/10W
R748	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R749	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R750	1-216-025-00	METAL GLAZE	100	5%	1/10W
R751	1-216-029-00	METAL GLAZE	150	5%	1/10W
R752	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R753	1-216-041-00	METAL GLAZE	470	5%	1/10W
R754	1-216-047-00	METAL GLAZE	820	5%	1/10W
R755	1-216-025-00	METAL GLAZE	100	5%	1/10W
R756	1-216-025-00	METAL GLAZE	100	5%	1/10W
R757	1-216-025-00	METAL GLAZE	100	5%	1/10W
R758	1-216-025-00	METAL GLAZE	100	5%	1/10W
R759	1-216-047-00	METAL GLAZE	820	5%	1/10W
R760	1-216-041-00	METAL GLAZE	470	5%	1/10W
R761	1-216-029-00	METAL GLAZE	150	5%	1/10W
R762	1-216-029-00	METAL GLAZE	150	5%	1/10W
R763	1-216-029-00	METAL GLAZE	150	5%	1/10W
R764	1-216-029-00	METAL GLAZE	150	5%	1/10W
R765	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R766	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R767	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R768	1-216-025-00	METAL GLAZE	100	5%	1/10W
R769	1-216-029-00	METAL GLAZE	150	5%	1/10W
R770	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R771	1-216-041-00	METAL GLAZE	470	5%	1/10W
R772	1-216-047-00	METAL GLAZE	820	5%	1/10W
R773	1-216-025-00	METAL GLAZE	100	5%	1/10W
R774	1-216-025-00	METAL GLAZE	100	5%	1/10W
R775	1-216-029-00	METAL GLAZE	150	5%	1/10W
R776	1-216-029-00	METAL GLAZE	150	5%	1/10W
R777	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R780	1-216-295-00	METAL GLAZE	0	5%	1/10W
R781	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R782	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R785	1-216-295-00	METAL GLAZE	0	5%	1/10W
R786	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R787	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R790	1-216-295-00	METAL GLAZE	0	5%	1/10W
R791	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R792	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R793	1-216-029-00	METAL GLAZE	150	5%	1/10W
R794	1-216-029-00	METAL GLAZE	150	5%	1/10W
R795	1-216-029-00	METAL GLAZE	150	5%	1/10W
R796	1-216-029-00	METAL GLAZE	150	5%	1/10W
R797	1-216-029-00	METAL GLAZE	150	5%	1/10W
R798	1-216-029-00	METAL GLAZE	150	5%	1/10W
R799	1-216-029-00	METAL GLAZE	150	5%	1/10W

VARIABLE RESISTORS

Ref.No.	Part No.	Description	Remark
RV701	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV702	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV703	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV704	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV705	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV706	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV707	1-228-990-00	RES, ADJ, METAL GLAZE 1K	
RV708	1-241-030-11	RES, VAR, CARBON 10K	
RV709	1-241-030-11	RES, VAR, CARBON 10K	
RV710	1-241-030-11	RES, VAR, CARBON 10K	
W701	*1-945-745-11	HARNESS, BOARD IN (CN701)	
W706	*1-945-746-11	HARNESS, BOARD IN (CN706)	
W707	*1-945-747-11	HARNESS, BOARD IN (CN707)	

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Ref.No.	Part No.	Description			Remark
	*A-8271-079-A	COMPLETE PCB, MHC-4 ********************			

CAPACITORS

Ref.No.	Part No.	Description			Remark
C401	1-124-589-11	ELECT	47MF	20%	16V
C402	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C403	1-124-120-11	ELECT	220MF	20%	16V
C404	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C405	1-124-120-11	ELECT	220MF	20%	16V

Ref.No.	Part No.	Description			Remark
C406	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C407	1-130-493-00	MYLAR	0.068MF	5%	50V
C408	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C409	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C410	1-126-157-11	ELECT	10MF	20%	16V
C411	1-126-157-11	ELECT	10MF	20%	16V
C412	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C413	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C414	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C415	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C416	1-126-157-11	ELECT	10MF	20%	16V
C417	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C418	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C419	1-126-157-11	ELECT	10MF	20%	16V
C420	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C421	1-124-589-11	ELECT	47MF	20%	16V
C422	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C423	1-124-589-11	ELECT	47MF	20%	16V
C424	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C425	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C426	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C427	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C428	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C429	1-126-157-11	ELECT	10MF	20%	16V
C430	1-126-157-11	ELECT	10MF	20%	16V
C431	1-126-157-11	ELECT	10MF	20%	16V
C432	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C433	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C434	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C435	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C436	1-126-157-11	ELECT	10MF	20%	16V
C437	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C438	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C439	1-126-157-11	ELECT	10MF	20%	16V
C440	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C441	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C442	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C443	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C444	1-124-229-00	ELECT	33MF	20%	10V
C445	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C446	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C447	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C448	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C449	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C450	1-126-157-11	ELECT	10MF	20%	16V
C451	1-126-157-11	ELECT	10MF	20%	16V
C452	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C453	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C454	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C455	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C456	1-126-157-11	ELECT	10MF	20%	16V
C457	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C458	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C459	1-126-157-11	ELECT	10MF	20%	16V
C460	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C461	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C462	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C463	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C464	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C465	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C466	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C467	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C468	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C470	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C471	1-163-097-00	CERAMIC CHIP	15PF	5%	50V

Ref.No.	Part No.	Description			Remark
C472	1-126-160-11	ELECT	1MF	20%	50V
C473	1-126-157-11	ELECT	10MF	20%	16V
C474	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C475	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C477	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C478	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C479	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C480	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C481	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C490	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C491	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C492	1-126-160-11	ELECT	1MF	20%	50V
C493	1-126-157-11	ELECT	10MF	20%	16V
C494	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C500	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C501	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C502	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C503	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C504	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C505	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C507	1-124-589-11	ELECT	47MF	20%	16V
C508	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C509	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C510	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C511	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C512	1-126-160-11	ELECT	1MF	20%	50V
C513	1-126-157-11	ELECT	10MF	20%	16V
C514	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C515	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C516	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C517	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C518	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C519	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C520	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C521	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C522	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C523	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C524	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C525	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C532	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C533	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C534	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C535	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C551	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C552	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C553	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C555	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C556	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C557	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C558	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V

CONNECTORS

CN407	*1-563-045-11	SOCKET, CONNECTOR 40P
CN408	*1-569-610-11	SOCKET, CONNECTOR 34P

TRIMMER

CV401	1-141-245-00	TRIMMER, CERAMIC

DIODES

D410	8-719-109-81	DIODE RD4.7ES-B2
D430	8-719-109-81	DIODE RD4.7ES-B2
D450	8-719-109-81	DIODE RD4.7ES-B2

INDUCTORS

Ref.No.	Part No.	Description	Remark
FB410	1-410-397-21	FERRITE BEAD INDUCTOR	
FB430	1-410-397-21	FERRITE BEAD INDUCTOR	
FB440	1-410-397-21	FERRITE BEAD INDUCTOR	
FB450	1-410-397-21	FERRITE BEAD INDUCTOR	

FILTERS

Ref.No.	Part No.	Description	Remark
FL401	1-236-619-21	FILTER, LOW PASS	
FL403	1-236-619-21	FILTER, LOW PASS	
FL404	1-236-619-21	FILTER, LOW PASS	
FL405	1-236-619-21	FILTER, LOW PASS	
FL406	1-236-619-21	FILTER, LOW PASS	
FL407	1-236-619-21	FILTER, LOW PASS	
FL408	1-236-619-21	FILTER, LOW PASS	
FL409	1-236-619-21	FILTER, LOW PASS	
FL410	1-235-559-11	FILTER, LOW PASS	
FL411	1-236-619-21	FILTER, LOW PASS	
FL412	1-236-619-21	FILTER, LOW PASS	
FL413	1-236-619-21	FILTER, LOW PASS	
FL414	1-236-619-21	FILTER, LOW PASS	
FL415	1-236-619-21	FILTER, LOW PASS	
FL417	1-236-619-21	FILTER, LOW PASS	
FL418	1-236-619-21	FILTER, LOW PASS	
FL419	1-236-619-21	FILTER, LOW PASS	
FL420	1-236-619-21	FILTER, LOW PASS	
FL421	1-236-619-21	FILTER, LOW PASS	
FL422	1-236-619-21	FILTER, LOW PASS	
FL423	1-236-619-21	FILTER, LOW PASS	
FL424	1-236-619-21	FILTER, LOW PASS	
FL425	1-236-619-21	FILTER, LOW PASS	
FL426	1-236-619-21	FILTER, LOW PASS	
FL427	1-236-619-21	FILTER, LOW PASS	
FL428	1-236-619-21	FILTER, LOW PASS	
FL429	1-236-619-21	FILTER, LOW PASS	
FL430	1-235-559-11	FILTER, LOW PASS	
FL431	1-236-619-21	FILTER, LOW PASS	
FL432	1-236-619-21	FILTER, LOW PASS	
FL433	1-236-619-21	FILTER, LOW PASS	
FL434	1-236-619-21	FILTER, LOW PASS	
FL435	1-236-619-21	FILTER, LOW PASS	
FL436	1-236-619-21	FILTER, LOW PASS	
FL437	1-236-619-21	FILTER, LOW PASS	
FL438	1-236-619-21	FILTER, LOW PASS	
FL439	1-236-619-21	FILTER, LOW PASS	
FL440	1-527-604-00	FILTER, CERAMIC	
FL450	1-235-559-11	FILTER, LOW PASS	

IC

Ref.No.	Part No.	Description	Remark
IC410	8-752-334-55	IC CXD1175M	
IC411	8-759-145-73	IC UPD65024GF-066-3BA	
IC412	8-759-145-73	IC UPD65024GF-066-3BA	
IC413	8-759-901-38	IC SN74LS138N	
IC414	8-759-916-96	IC SN74HC374N	
IC415	8-759-916-96	IC SN74HC374N	
IC416	8-759-705-14	IC AM27C010PAL	
IC417	8-759-705-15	IC AM27C020PAL	
IC418	8-759-323-13	IC HD637B01YPAL	
IC419	8-759-140-94	IC CXD1332P	
IC420	8-752-032-93	IC CXA1260Q-Z	
IC421	8-752-321-16	IC CXD1030M	
IC422	8-759-902-45	IC SN74LS245N	
IC423	8-759-916-92	IC SN74HC367N	
IC424	8-759-916-92	IC SN74HC367N	
IC425	8-752-325-18	IC CXK5816SP-12L	
IC426	8-752-325-18	IC CXK5816SP-12L	
IC427	8-759-902-92	IC SN74LS541N	
IC428	8-752-322-10	IC CXK5814P-45L	
IC429	8-759-114-11	IC UPD65012CW-245	
IC430	8-752-334-55	IC CXD1175M	
IC431	8-759-924-12	IC LM7805CT	
IC432	8-759-502-77	IC SN74LS139AN	
IC433	8-759-502-77	IC SN74LS139AN	
IC434	8-759-001-90	IC MC74F74N	
IC435	8-759-916-29	IC SN74HC74N	
IC436	8-759-506-01	IC 74F27PC	
IC437	8-759-506-01	IC 74F27PC	
IC438	8-759-203-75	IC TC74HC4075P	
IC439	8-759-916-20	IC SN74HC14N	
IC440	8-759-917-18	IC SN74HCU04N	
IC441	8-759-917-18	IC SN74HCU04N	
IC442	8-759-916-12	IC SN74HC00N	
IC443	8-759-916-25	IC SN74HC32N	
IC444	8-759-970-26	IC PST523C	
IC445	8-759-904-79	IC 74F00PC	
IC446	8-752-332-15	IC CXK1206M	
IC447	8-752-332-15	IC CXK1206M	
IC448	8-752-332-15	IC CXK1206M	
IC449	8-752-332-15	IC CXK1206M	
IC450	8-752-334-55	IC CXD1175M	
IC451	8-759-991-06	IC NE555N	
IC452	8-752-332-15	IC CXK1206M	
IC453	8-752-332-15	IC CXK1206M	
IC454	8-752-332-15	IC CXK1206M	
IC455	8-752-332-15	IC CXK1206M	
IC456	8-752-332-15	IC CXK1206M	
IC457	8-752-332-15	IC CXK1206M	
IC458	8-752-332-15	IC CXK1206M	
IC459	8-752-332-15	IC CXK1206M	
IC460	8-759-917-18	IC SN74HCU04N	

SOCKET

Ref.No.	Part No.	Description	Remark
IS416	1-526-660-21	SOCKET, IC (DP) 32P	
IS417	1-526-660-21	SOCKET, IC (DP) 32P	
IS418	*1-526-950-11	SOCKET, IC 64P	

COILS

Ref.No.	Part No.	Description	Remark
L401	1-410-283-11	INDUCTOR (WITH CORE)	
L402	1-408-411-00	INDUCTOR 15UH	
L470	1-408-414-00	INDUCTOR 27UH	
L490	1-408-414-00	INDUCTOR 27UH	
L510	1-408-414-00	INDUCTOR 27UH	

TRANSISTOR

Ref.No.	Part No.	Description	Remark
Q401	8-729-100-66	TRANSISTOR 2SC1623	
Q410	8-729-100-66	TRANSISTOR 2SC1623	
Q411	8-729-216-22	TRANSISTOR 2SA1162	
Q412	8-729-402-02	TRANSISTOR 2SK656	
Q413	8-729-216-22	TRANSISTOR 2SA1162	
Q414	8-729-100-66	TRANSISTOR 2SC1623	
Q415	8-729-100-66	TRANSISTOR 2SC1623	
Q416	8-729-216-22	TRANSISTOR 2SA1162	
Q417	8-729-100-66	TRANSISTOR 2SC1623	
Q430	8-729-100-66	TRANSISTOR 2SC1623	
Q431	8-729-216-22	TRANSISTOR 2SA1162	
Q432	8-729-402-02	TRANSISTOR 2SK656	
Q433	8-729-216-22	TRANSISTOR 2SA1162	
Q434	8-729-100-66	TRANSISTOR 2SC1623	
Q435	8-729-100-66	TRANSISTOR 2SC1623	

Ref.No.	Part No.	Description			Remark
Q436	8-729-216-22	TRANSISTOR 2SA1162			
Q437	8-729-100-66	TRANSISTOR 2SC1623			
Q450	8-729-100-66	TRANSISTOR 2SC1623			
Q451	8-729-216-22	TRANSISTOR 2SA1162			
Q452	8-729-402-02	TRANSISTOR 2SK656			
Q453	8-729-216-22	TRANSISTOR 2SA1162			
Q454	8-729-100-66	TRANSISTOR 2SC1623			
Q455	8-729-100-66	TRANSISTOR 2SC1623			
Q456	8-729-216-22	TRANSISTOR 2SA1162			
Q457	8-729-100-66	TRANSISTOR 2SC1623			
Q470	8-729-100-66	TRANSISTOR 2SC1623			
Q471	8-729-100-66	TRANSISTOR 2SC1623			
Q472	8-729-100-66	TRANSISTOR 2SC1623			
Q473	8-729-216-22	TRANSISTOR 2SA1162			
Q490	8-729-100-66	TRANSISTOR 2SC1623			
Q491	8-729-100-66	TRANSISTOR 2SC1623			
Q492	8-729-100-66	TRANSISTOR 2SC1623			
Q493	8-729-216-22	TRANSISTOR 2SA1162			
Q510	8-729-100-66	TRANSISTOR 2SC1623			
Q511	8-729-100-66	TRANSISTOR 2SC1623			
Q512	8-729-100-66	TRANSISTOR 2SC1623			
Q513	8-729-216-22	TRANSISTOR 2SA1162			

RESISTORS

Ref.No.	Part No.	Description			Remark
R401	1-215-883-11	METAL OXIDE	33	5%	2W F
R402	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R403	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R404	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R410	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R411	1-216-025-00	METAL GLAZE	100	5%	1/10W
R412	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R413	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R414	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R415	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R416	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R417	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R418	1-216-025-00	METAL GLAZE	100	5%	1/10W
R419	1-216-041-00	METAL GLAZE	470	5%	1/10W
R420	1-216-041-00	METAL GLAZE	470	5%	1/10W
R421	1-216-025-00	METAL GLAZE	100	5%	1/10W
R422	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R423	1-216-017-00	METAL GLAZE	47	5%	1/10W
R424	1-216-025-00	METAL GLAZE	100	5%	1/10W
R430	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R431	1-216-025-00	METAL GLAZE	100	5%	1/10W
R432	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R433	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R434	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R435	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R436	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R437	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R438	1-216-025-00	METAL GLAZE	100	5%	1/10W
R439	1-216-041-00	METAL GLAZE	470	5%	1/10W
R440	1-216-041-00	METAL GLAZE	470	5%	1/10W
R441	1-216-025-00	METAL GLAZE	100	5%	1/10W
R442	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R443	1-216-017-00	METAL GLAZE	47	5%	1/10W
R444	1-216-025-00	METAL GLAZE	100	5%	1/10W
R450	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R451	1-216-025-00	METAL GLAZE	100	5%	1/10W
R452	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R453	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R454	1-216-639-11	METAL CHIP	330	0.50%	1/10W
R455	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W

Ref.No.	Part No.	Description			Remark
R456	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R457	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R458	1-216-025-00	METAL GLAZE	100	5%	1/10W
R459	1-216-041-00	METAL GLAZE	470	5%	1/10W
R460	1-216-041-00	METAL GLAZE	470	5%	1/10W
R461	1-216-025-00	METAL GLAZE	100	5%	1/10W
R462	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R463	1-216-017-00	METAL GLAZE	47	5%	1/10W
R464	1-216-025-00	METAL GLAZE	100	5%	1/10W
R470	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R471	1-216-025-00	METAL GLAZE	100	5%	1/10W
R472	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R473	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R474	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R475	1-216-025-00	METAL GLAZE	100	5%	1/10W
R476	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R477	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R478	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R479	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R480	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R481	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R482	1-216-025-00	METAL GLAZE	100	5%	1/10W
R490	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R491	1-216-025-00	METAL GLAZE	100	5%	1/10W
R492	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R493	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R494	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R495	1-216-025-00	METAL GLAZE	100	5%	1/10W
R496	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R497	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R498	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R499	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R500	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R501	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R502	1-216-025-00	METAL GLAZE	100	5%	1/10W
R504	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R505	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R510	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R511	1-216-025-00	METAL GLAZE	100	5%	1/10W
R512	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R513	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R514	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R515	1-216-025-00	METAL GLAZE	100	5%	1/10W
R516	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R517	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R518	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R519	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R520	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R521	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R522	1-216-025-00	METAL GLAZE	100	5%	1/10W
R530	1-216-017-00	METAL GLAZE	47	5%	1/10W
R531	1-216-017-00	METAL GLAZE	47	5%	1/10W
R532	1-216-017-00	METAL GLAZE	47	5%	1/10W
R533	1-216-017-00	METAL GLAZE	47	5%	1/10W
R534	1-216-017-00	METAL GLAZE	47	5%	1/10W
R535	1-216-017-00	METAL GLAZE	47	5%	1/10W
R536	1-216-017-00	METAL GLAZE	47	5%	1/10W
R537	1-216-017-00	METAL GLAZE	47	5%	1/10W
R538	1-216-017-00	METAL GLAZE	47	5%	1/10W
R539	1-216-017-00	METAL GLAZE	47	5%	1/10W
R540	1-216-017-00	METAL GLAZE	47	5%	1/10W
R541	1-216-017-00	METAL GLAZE	47	5%	1/10W
R542	1-216-017-00	METAL GLAZE	47	5%	1/10W
R543	1-216-017-00	METAL GLAZE	47	5%	1/10W
R544	1-216-017-00	METAL GLAZE	47	5%	1/10W

Ref.No.	Part No.	Description			Remark
R545	1-216-017-00	METAL GLAZE	47	5%	1/10W
R546	1-216-017-00	METAL GLAZE	47	5%	1/10W
R547	1-216-017-00	METAL GLAZE	47	5%	1/10W
R548	1-216-017-00	METAL GLAZE	47	5%	1/10W
R549	1-216-017-00	METAL GLAZE	47	5%	1/10W
R550	1-216-017-00	METAL GLAZE	47	5%	1/10W
R551	1-216-017-00	METAL GLAZE	47	5%	1/10W
R552	1-216-017-00	METAL GLAZE	47	5%	1/10W
R553	1-216-017-00	METAL GLAZE	47	5%	1/10W
R554	1-216-017-00	METAL GLAZE	47	5%	1/10W
R555	1-216-041-00	METAL GLAZE	470	5%	1/10W
R556	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R557	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R558	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R559	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R560	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R561	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R562	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R563	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R564	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R565	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R566	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R567	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R568	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R569	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R570	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R571	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R572	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R573	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R574	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R575	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R576	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R577	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R578	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R579	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R580	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R581	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R582	1-216-037-00	METAL GLAZE	330	5%	1/10W
R583	1-216-045-00	METAL GLAZE	680	5%	1/10W
R584	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R585	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R586	1-216-017-00	METAL GLAZE	47	5%	1/10W
R587	1-216-017-00	METAL GLAZE	47	5%	1/10W
R588	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R589	1-216-119-00	METAL GLAZE	820K	5%	1/10W
R590	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R592	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R593	1-216-017-00	METAL GLAZE	47	5%	1/10W
R594	1-216-073-00	METAL GLAZE	10K	5%	1/10W

VARIABLE RESISTORS

RV401	1-228-999-00	RES, ADJ, METAL GLAZE 470K
RV402	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV403	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K

SWITCHES

SW401	1-553-856-00	SWITCH, KEY BOARD
SW402	1-571-020-11	SWITCH, DIP

W401	*1-945-738-11	HARNESS, BOARD IN (CN401)
W402	*1-945-739-11	HARNESS, BOARD IN (CN402)
W403	*1-945-740-11	HARNESS, BOARD IN (CN403)
W404	*1-945-741-11	HARNESS, BOARD IN (CN404)
W405	*1-945-742-11	HARNESS, BOARD IN (CN405)
W406	*1-945-743-11	HARNESS, BOARD IN (CN406)

CRYSTAL

X401	1-567-878-11	VIBRATOR, CRYSTAL
X402	1-567-132-00	VIBRATOR, CERAMIC
X403	1-527-723-00	VIBRATOR, CRYSTAL

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*A-8271-080-A COMPLETE PCB, VA-5
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CAPACITORS

Ref.No.	Part No.	Description			Remark
C1	1-124-472-11	ELECT	470MF	20%	10V
C2	1-124-589-11	ELECT	47MF	20%	16V
C3	1-124-589-11	ELECT	47MF	20%	16V
C4	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C5	1-124-472-11	ELECT	470MF	20%	10V
C6	1-124-589-11	ELECT	47MF	20%	16V
C7	1-124-589-11	ELECT	47MF	20%	16V
C8	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C9	1-124-584-00	ELECT	100MF	20%	10V
C10	1-124-472-11	ELECT	470MF	20%	10V
C11	1-124-589-11	ELECT	47MF	20%	16V
C12	1-124-589-11	ELECT	47MF	20%	16V
C13	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C14	1-124-584-00	ELECT	100MF	20%	10V
C15	1-124-257-00	ELECT	2.2MF	20%	50V
C16	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C17	1-124-472-11	ELECT	470MF	20%	10V
C18	1-124-589-11	ELECT	47MF	20%	16V
C19	1-124-589-11	ELECT	47MF	20%	16V
C20	1-124-589-11	ELECT	47MF	20%	16V
C21	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C22	1-124-589-11	ELECT	47MF	20%	16V
C23	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C24	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C25	1-124-257-00	ELECT	2.2MF	20%	50V
C26	1-124-257-00	ELECT	2.2MF	20%	50V
C27	1-124-584-00	ELECT	100MF	20%	10V
C28	1-124-584-00	ELECT	100MF	20%	10V
C29	1-124-589-11	ELECT	47MF	20%	16V
C30	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C31	1-124-472-11	ELECT	470MF	20%	10V
C32	1-124-589-11	ELECT	47MF	20%	16V
C33	1-124-589-11	ELECT	47MF	20%	16V
C34	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C35	1-124-584-00	ELECT	100MF	20%	10V
C36	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C37	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C38	1-124-589-11	ELECT	47MF	20%	16V
C39	1-124-589-11	ELECT	47MF	20%	16V
C40	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C41	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C42	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C43	1-124-472-11	ELECT	470MF	20%	10V
C46	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C49	1-124-589-11	ELECT	47MF	20%	16V
C50	1-124-257-00	ELECT	2.2MF	20%	50V
C51	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C52	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C53	1-124-589-11	ELECT	47MF	20%	16V
C54	1-163-038-00	CERAMIC CHIP	0.1MF		25V

Ref.No.	Part No.	Description			Remark
C55	1-126-157-11	ELECT	10MF	20%	16V
C56	1-124-584-00	ELECT	100MF	20%	10V
C57	1-124-589-11	ELECT	47MF	20%	16V
C58	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C59	1-124-584-00	ELECT	100MF	20%	10V
C62	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C63	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C64	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C65	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C66	1-126-157-11	ELECT	10MF	20%	16V
C67	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C68	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C69	1-126-157-11	ELECT	10MF	20%	16V
C70	1-126-157-11	ELECT	10MF	20%	16V
C71	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C72	1-163-134-00	CERAMIC CHIP	510PF	5%	50V
C73	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C74	1-163-134-00	CERAMIC CHIP	510PF	5%	50V
C75	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C76	1-124-257-00	ELECT	2.2MF	20%	50V
C80	1-126-160-11	ELECT	1MF	20%	50V
C81	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C82	1-126-101-11	ELECT	100MF	20%	16V
C92	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C94	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C95	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C96	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C97	1-124-589-11	ELECT	47MF	20%	16V
C98	1-124-589-11	ELECT	47MF	20%	16V
C99	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C105	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C106	1-124-589-11	ELECT	47MF	20%	16V
C107	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C108	1-124-589-11	ELECT	47MF	20%	16V
C109	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C110	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C111	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C112	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C113	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C114	1-126-160-11	ELECT	1MF	20%	50V
C115	1-126-160-11	ELECT	1MF	20%	50V
C116	1-126-160-11	ELECT	1MF	20%	50V
C117	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C118	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C119	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C120	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C121	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C122	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C123	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C124	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C125	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C126	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C127	1-124-589-11	ELECT	47MF	20%	16V
C128	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C129	1-124-589-11	ELECT	47MF	20%	16V
C130	1-124-589-11	ELECT	47MF	20%	16V
C131	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C132	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C133	1-124-257-00	ELECT	2.2MF	20%	50V
C135	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C136	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C138	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C139	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C140	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C141	1-124-589-11	ELECT	47MF	20%	16V
C142	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C143	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C144	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C145	1-130-491-00	MYLAR	0.047MF	5%	50V
C146	1-136-173-00	FILM	0.47MF	5%	50V
C147	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C148	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C149	1-124-589-11	ELECT	47MF	20%	16V
C150	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C151	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C152	1-126-157-11	ELECT	10MF	20%	16V
C153	1-124-465-00	ELECT	0.47MF	20%	50V
C155	1-126-157-11	ELECT	10MF	20%	16V
C156	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C157	1-163-087-00	CERAMIC CHIP	4PF	0.25PF	50V
C158	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C159	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C160	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C161	1-124-589-11	ELECT	47MF	20%	16V
C162	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V
C163	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C164	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C165	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C166	1-124-589-11	ELECT	47MF	20%	16V
C167	1-124-589-11	ELECT	47MF	20%	16V
C168	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C169	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C170	1-126-157-11	ELECT	10MF	20%	16V
C171	1-124-465-00	ELECT	0.47MF	20%	50V
C173	1-126-157-11	ELECT	10MF	20%	16V
C174	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C175	1-163-087-00	CERAMIC CHIP	4PF	0.25PF	50V
C176	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C177	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C178	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C179	1-124-589-11	ELECT	47MF	20%	16V
C180	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V
C181	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C182	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C183	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C184	1-124-589-11	ELECT	47MF	20%	16V
C185	1-124-589-11	ELECT	47MF	20%	16V
C186	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C187	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C188	1-126-157-11	ELECT	10MF	20%	16V
C189	1-124-465-00	ELECT	0.47MF	20%	50V
C191	1-126-157-11	ELECT	10MF	20%	16V
C192	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C193	1-163-087-00	CERAMIC CHIP	4PF	0.25PF	50V
C194	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C195	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C196	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C197	1-124-589-11	ELECT	47MF	20%	16V
C198	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V
C199	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C200	1-163-089-00	CERAMIC CHIP	6PF	0.5PF	50V
C201	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C202	1-124-589-11	ELECT	47MF	20%	16V
C203	1-124-589-11	ELECT	47MF	20%	16V
C204	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C205	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C206	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C207	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C208	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C209	1-124-589-11	ELECT	47MF	20%	16V

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Ref.No.	Part No.	Description			Remark
C210	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C211	1-126-157-11	ELECT	10MF	20%	16V
C212	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C213	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C214	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C215	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C216	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C217	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C218	1-126-160-11	ELECT	1MF	20%	50V
C219	1-124-589-11	ELECT	47MF	20%	16V
C220	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C251	1-124-589-11	ELECT	47MF	20%	16V
C252	1-124-584-00	ELECT	100MF	20%	10V
C253	1-126-160-11	ELECT	1MF	20%	50V
C254	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C255	1-126-157-11	ELECT	10MF	20%	16V
C256	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C257	1-124-589-11	ELECT	47MF	20%	16V
C258	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C259	1-124-589-11	ELECT	47MF	20%	16V
C260	1-124-584-00	ELECT	100MF	20%	10V
C261	1-126-160-11	ELECT	1MF	20%	50V
C262	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C263	1-126-157-11	ELECT	10MF	20%	16V
C264	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C265	1-124-589-11	ELECT	47MF	20%	16V
C266	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C267	1-124-589-11	ELECT	47MF	20%	16V
C268	1-124-584-00	ELECT	100MF	20%	10V
C269	1-126-160-11	ELECT	1MF	20%	50V
C270	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C271	1-126-157-11	ELECT	10MF	20%	16V
C272	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C273	1-124-589-11	ELECT	47MF	20%	16V
C274	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C275	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C276	1-124-589-11	ELECT	47MF	20%	16V
C277	1-124-465-00	ELECT	0.47MF	20%	50V
C278	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C279	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C280	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C281	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C282	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C283	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C284	1-124-589-11	ELECT	47MF	20%	16V
C285	1-124-589-11	ELECT	47MF	20%	16V
C286	1-124-471-00	ELECT	1000MF	20%	6.3V
C287	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C288	1-124-584-00	ELECT	100MF	20%	10V
C289	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C290	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C291	1-124-589-11	ELECT	47MF	20%	16V
C292	1-124-471-00	ELECT	1000MF	20%	6.3V
C293	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C294	1-124-589-11	ELECT	47MF	20%	16V
C295	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C296	1-124-471-00	ELECT	1000MF	20%	6.3V
C297	1-124-471-00	ELECT	1000MF	20%	6.3V
C298	1-124-471-00	ELECT	1000MF	20%	6.3V
C299	1-124-471-00	ELECT	1000MF	20%	6.3V
C300	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C301	1-126-101-11	ELECT	100MF	20%	16V
C302	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C303	1-126-101-11	ELECT	100MF	20%	16V
C304	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C305	1-126-101-11	ELECT	100MF	20%	16V
C306	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C307	1-124-589-11	ELECT	47MF	20%	16V
C308	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C309	1-124-589-11	ELECT	47MF	20%	16V
C310	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C311	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C312	1-126-157-11	ELECT	10MF	20%	16V
C313	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C314	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C315	1-126-157-11	ELECT	10MF	20%	16V
C316	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C317	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C318	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C319	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C320	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C946	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C947	1-124-584-00	ELECT	100MF	20%	10V
C948	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C949	1-124-589-11	ELECT	47MF	20%	16V
C950	1-124-589-11	ELECT	47MF	20%	16V
C980	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C981	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C982	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C983	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C984	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C985	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C987	1-136-169-00	FILM	0.22MF	5%	50V
C988	1-136-169-00	FILM	0.22MF	5%	50V
C989	1-136-169-00	FILM	0.22MF	5%	50V
C990	1-130-487-00	FILM	0.022MF		50V
C991	1-126-160-11	ELECT	1MF	20%	50V
C992	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C993	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C994	1-136-173-00	FILM	0.47MF	5%	50V
C995	1-136-167-00	FILM	0.15MF	5%	50V
C996	1-136-169-00	FILM	0.22MF	5%	50V
C997	1-130-475-00	MYLAR	0.0022MF	5%	50V
C998	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C999	1-124-234-00	ELECT	22MF	20%	16V

CONNECTORS

CN2	*1-568-955-11	PIN, CONNECTOR 6P
CN3	1-506-470-11	PIN, CONNECTOR 5P
CN4	*1-564-011-61	PIN, CONNECTOR 12P
CN5	*1-564-855-51	PIN, CONNECTOR 15P
CN6	1-506-473-11	PIN, CONNECTOR 8P
CN7	*1-506-471-11	PIN, CONNECTOR 6P
CN8	1-506-471-11	PIN, CONNECTOR 6P
CN9	1-506-473-11	PIN, CONNECTOR 8P
CN10	1-506-468-11	PIN, CONNECTOR 3P
CN12	*1-568-939-11	PIN, CONNECTOR 12P

TRIMMERS

CV998	1-141-245-00	CAP, TRIMMER
CV999	1-141-245-00	CAP, TRIMMER

DIODES

D1	8-719-400-18	DIODE MA152WK
D3	8-719-400-18	DIODE MA152WK
D4	8-719-800-76	DIODE 1SS226
D5	8-719-400-18	DIODE MA152WK
D7	8-719-400-18	DIODE MA152WK

Ref.No.	Part No.	Description	Remark
D10	8-719-400-18	DIODE MA152WK	
D14	8-719-400-18	DIODE MA152WK	
D16	8-719-400-18	DIODE MA152WK	
D19	8-719-400-18	DIODE MA152WK	
D20	8-719-104-34	DIODE 1S2836	
D21	8-719-104-34	DIODE 1S2836	
D22	8-719-104-34	DIODE 1S2836	
D23	8-719-105-XX	DIODE RD6.2M-B1	
D24	8-719-400-18	DIODE MA152WK	
D950	8-719-400-18	DIODE MA152WK	

DELAY LINE

DL2	1-415-448-21	DELAY LINE	
DL3	1-415-448-21	DELAY LINE	
DL4	1-415-448-21	DELAY LINE	
DL5	1-415-448-21	DELAY LINE	
DL949	1-415-448-21	DELAY LINE	
DL950	1-415-448-21	DELAY LINE	
DL999	1-415-122-31	DELAY LINE, 1H (PAL)	

FILTERS

FL1	1-235-833-11	YC MODULE	
FL6	1-235-439-11	FILTER, BAND PASS (4.43MHz)	

IC

IC1	8-759-710-86	IC NJM2233BM	
IC2	8-759-710-86	IC NJM2233BM	
IC4	8-759-710-86	IC NJM2233BM	
IC5	8-759-009-51	IC MC14538BF	
IC6	8-759-208-67	IC CX-867	
IC7	8-759-710-86	IC NJM2233BM	
IC9	8-759-038-15	IC MC74HC4538AF	
IC10	8-752-036-21	IC CXA1213S	
IC11	8-752-030-31	IC CXA1024S	
IC12	8-759-037-41	IC MC14577AF	
IC13	8-759-037-41	IC MC14577AF	
IC14	8-759-710-12	IC NJM2230M	
IC15	8-759-146-70	IC SYNC88	
IC16	8-759-926-77	IC SN74HC541NS	
IC17	8-759-908-16	IC TL072CPS	
IC18	8-759-037-41	IC MC14577AF	
IC19	1-808-584-11	IC NJM2209S	
IC20	8-759-982-21	IC RC78L05A	
IC21	8-752-336-09	IC CXD1050A-10P	
IC22	8-752-033-58	IC V7040	
IC23	8-759-037-41	IC MC14577AF	
IC24	8-759-982-05	IC RC7805FA	
IC25	8-759-982-25	IC RC78L09A	
IC26	8-759-925-80	IC SN74HC14NS	
IC27	8-759-925-80	IC SN74HC14NS	
IC28	8-759-927-46	IC SN74HC00NS	
IC29	8-759-941-17	IC SN74LS06NS	
IC30	8-759-038-15	IC MC74HC4538AF	
IC31	8-759-925-76	IC SN74HC08NS	
IC32	8-759-926-19	IC SN74HC158NS	
IC399	8-759-038-15	IC MC74HC4538AF	
IC950	8-759-982-22	IC RC78L06A	
IC998	8-759-925-98	IC SN74HC107NS	

INDUCTORS

L1	1-408-409-00	INDUCTOR 10UH	
L2	1-408-409-00	INDUCTOR 10UH	
L3	1-408-978-21	INDUCTOR 47UH	
L5	1-408-980-21	INDUCTOR 68UH	
L6	1-408-976-21	INDUCTOR 33UH	

Ref.No.	Part No.	Description	Remark
L999	1-408-967-21	INDUCTOR 5.6UH	

COILS

LV1	1-404-719-11	COIL, IFT (7VS)	
LV999	1-404-524-11	DAT	

TRANSISTORS

Q1	8-729-420-36	TRANSISTOR XN2501	
Q2	8-729-100-66	TRANSISTOR 2SC1623	
Q3	8-729-420-36	TRANSISTOR XN2501	
Q4	8-729-100-66	TRANSISTOR 2SC1623	
Q5	8-729-420-36	TRANSISTOR XN2501	
Q6	8-729-100-66	TRANSISTOR 2SC1623	
Q7	8-729-420-36	TRANSISTOR XN2501	
Q8	8-729-100-66	TRANSISTOR 2SC1623	
Q9	8-729-420-36	TRANSISTOR XN2501	
Q11	8-729-100-66	TRANSISTOR 2SC1623	
Q12	8-729-420-36	TRANSISTOR XN2501	
Q13	8-729-100-66	TRANSISTOR 2SC1623	
Q14	8-729-420-36	TRANSISTOR XN2501	
Q15	8-729-100-66	TRANSISTOR 2SC1623	
Q17	8-729-216-22	TRANSISTOR 2SA1162	
Q18	8-729-100-66	TRANSISTOR 2SC1623	
Q19	8-729-100-66	TRANSISTOR 2SC1623	
Q20	8-729-100-66	TRANSISTOR 2SC1623	
Q23	8-729-100-66	TRANSISTOR 2SC1623	
Q24	8-729-100-66	TRANSISTOR 2SC1623	
Q25	8-729-100-66	TRANSISTOR 2SC1623	
Q26	8-729-216-22	TRANSISTOR 2SA1162	
Q27	8-729-100-66	TRANSISTOR 2SC1623	
Q29	8-729-100-66	TRANSISTOR 2SC1623	
Q32	8-729-421-23	TRANSISTOR XN1216	
Q33	8-769-401-89	TRANSISTOR TX429M	
Q34	8-729-421-23	TRANSISTOR XN1216	
Q35	8-729-122-63	TRANSISTOR 2SA1226	
Q36	8-729-420-36	TRANSISTOR XN2501	
Q37	8-729-402-87	TRANSISTOR XN2401	
Q40	8-729-421-23	TRANSISTOR XN1216	
Q42	8-729-122-63	TRANSISTOR 2SA1226	
Q43	8-729-420-36	TRANSISTOR XN2501	
Q44	8-729-402-87	TRANSISTOR XN2401	
Q47	8-729-421-23	TRANSISTOR XN1216	
Q48	8-769-401-89	TRANSISTOR TX429M	
Q49	8-729-421-23	TRANSISTOR XN1216	
Q50	8-729-122-63	TRANSISTOR 2SA1226	
Q51	8-729-420-36	TRANSISTOR XN2501	
Q52	8-729-402-87	TRANSISTOR XN2401	
Q55	8-729-421-23	TRANSISTOR XN1216	
Q57	8-729-122-63	TRANSISTOR 2SA1226	
Q58	8-729-420-36	TRANSISTOR XN2501	
Q59	8-729-402-87	TRANSISTOR XN2401	
Q62	8-729-421-23	TRANSISTOR XN1216	
Q63	8-769-401-89	TRANSISTOR TX429M	
Q64	8-729-421-23	TRANSISTOR XN1216	
Q65	8-729-122-63	TRANSISTOR 2SA1226	
Q66	8-729-420-36	TRANSISTOR XN2501	
Q67	8-729-402-87	TRANSISTOR XN2401	
Q70	8-729-421-23	TRANSISTOR XN1216	
Q72	8-729-122-63	TRANSISTOR 2SA1226	
Q73	8-729-420-36	TRANSISTOR XN2501	
Q74	8-729-402-87	TRANSISTOR XN2401	
Q77	8-729-421-23	TRANSISTOR XN1216	

VA-5

Ref.No.	Part No.	Description	Remark
Q80	8-729-216-22	TRANSISTOR 2SA1162	
Q81	8-729-100-66	TRANSISTOR 2SC1623	
Q82	8-729-100-66	TRANSISTOR 2SC1623	
Q84	8-729-100-66	TRANSISTOR 2SC1623	
Q101	8-729-100-66	TRANSISTOR 2SC1623	
Q102	8-769-401-89	TRANSISTOR TX429M	
Q103	8-729-402-87	TRANSISTOR XN2401	
Q104	8-729-100-66	TRANSISTOR 2SC1623	
Q105	8-729-100-66	TRANSISTOR 2SC1623	
Q106	8-769-401-89	TRANSISTOR TX429M	
Q107	8-729-402-87	TRANSISTOR XN2401	
Q108	8-729-100-66	TRANSISTOR 2SC1623	
Q109	8-729-100-66	TRANSISTOR 2SC1623	
Q110	8-769-401-89	TRANSISTOR TX429M	
Q111	8-729-402-87	TRANSISTOR XN2401	
Q112	8-729-100-66	TRANSISTOR 2SC1623	
Q113	8-729-100-66	TRANSISTOR 2SC1623	
Q114	8-729-216-22	TRANSISTOR 2SA1162	
Q115	8-729-216-22	TRANSISTOR 2SA1162	
Q116	8-729-216-22	TRANSISTOR 2SA1162	
Q117	8-729-216-22	TRANSISTOR 2SA1162	
Q118	8-729-100-66	TRANSISTOR 2SC1623	
Q949	8-729-100-66	TRANSISTOR 2SC1623	
Q950	8-729-420-36	TRANSISTOR XN2501	
Q998	8-729-100-66	TRANSISTOR 2SC1623	
Q999	8-729-100-66	TRANSISTOR 2SC1623	

RESISTORS

Ref.No.	Part No.	Description			Remark
R1	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R2	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R3	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R4	1-216-045-00	METAL GLAZE	680	5%	1/10W
R5	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R6	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R7	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R8	1-216-025-00	METAL GLAZE	100	5%	1/10W
R9	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R10	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R11	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R12	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R13	1-216-045-00	METAL GLAZE	680	5%	1/10W
R14	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R15	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R16	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R17	1-216-025-00	METAL GLAZE	100	5%	1/10W
R18	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R19	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R20	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R21	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R22	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R23	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R24	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R25	1-216-045-00	METAL GLAZE	680	5%	1/10W
R26	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R27	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R28	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R29	1-216-025-00	METAL GLAZE	100	5%	1/10W
R30	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R31	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R32	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R33	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R34	1-216-045-00	METAL GLAZE	680	5%	1/10W
R35	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R36	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R37	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R38	1-216-025-00	METAL GLAZE	100	5%	1/10W
R39	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R40	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R44	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R45	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R46	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R47	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R48	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R49	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R50	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R51	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R52	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R53	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R54	1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W
R55	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R56	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R57	1-216-025-00	METAL GLAZE	100	5%	1/10W
R58	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R60	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R61	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R62	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R63	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R64	1-216-045-00	METAL GLAZE	680	5%	1/10W
R65	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R66	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R67	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R68	1-216-025-00	METAL GLAZE	100	5%	1/10W
R69	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R70	1-216-682-11	METAL CHIP	20K	0.50%	1/10W
R71	1-216-631-11	METAL CHIP	150	0.50%	1/10W
R72	1-216-633-11	METAL CHIP	180	0.50%	1/10W
R89	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R91	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R92	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R95	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R96	1-216-025-00	METAL GLAZE	100	5%	1/10W
R97	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R98	1-216-025-00	METAL GLAZE	100	5%	1/10W
R99	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R100	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R101	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R102	1-216-099-00	METAL GLAZE	120K	5%	1/10W
R103	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R104	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R105	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R106	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R107	1-216-113-00	METAL GLAZE	470K	5%	1/10W
R108	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R109	1-216-688-11	METAL CHIP	36K	0.50%	1/10W
R110	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R111	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R116	1-216-047-00	METAL GLAZE	820	5%	1/10W
R118	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R124	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R125	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R126	1-216-117-00	METAL GLAZE	680K	5%	1/10W
R127	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R128	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R132	1-216-693-11	METAL CHIP	56K	0.50%	1/10W
R133	1-216-680-11	METAL CHIP	16K	0.50%	1/10W
R137	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R139	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R141	1-216-045-00	METAL GLAZE	680	5%	1/10W

Ref.No.	Part No.	Description			Remark
R145	1-216-035-00	METAL GLAZE	270	5%	1/10W
R148	1-216-035-00	METAL GLAZE	270	5%	1/10W
R149	1-216-035-00	METAL GLAZE	270	5%	1/10W
R150	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R151	1-216-025-00	METAL GLAZE	100	5%	1/10W
R152	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R153	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R154	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R155	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R156	1-216-041-00	METAL GLAZE	470	5%	1/10W
R157	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R158	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R160	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R161	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R162	1-216-645-11	METAL CHIP	560	0.50%	1/10W
R163	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R164	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R165	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R166	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W
R167	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R168	1-216-025-00	METAL GLAZE	100	5%	1/10W
R169	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R170	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W
R171	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R172	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R173	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R174	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R175	1-216-645-11	METAL CHIP	560	0.50%	1/10W
R176	1-216-025-00	METAL GLAZE	100	5%	1/10W
R177	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R178	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R179	1-216-645-11	METAL CHIP	560	0.50%	1/10W
R180	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R181	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R182	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W
R183	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R184	1-216-025-00	METAL GLAZE	100	5%	1/10W
R185	1-216-025-00	METAL GLAZE	100	5%	1/10W
R186	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R187	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R188	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R189	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R194	1-216-025-00	METAL GLAZE	100	5%	1/10W
R195	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R196	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R197	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R201	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R202	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R203	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R204	1-216-031-00	METAL GLAZE	180	5%	1/10W
R205	1-216-039-00	METAL GLAZE	390	5%	1/10W
R206	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R207	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R210	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R211	1-216-025-00	METAL GLAZE	100	5%	1/10W
R212	1-216-025-00	METAL GLAZE	100	5%	1/10W
R213	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R214	1-216-025-00	METAL GLAZE	100	5%	1/10W
R215	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R216	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R217	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R219	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R220	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R221	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R222	1-216-073-00	METAL GLAZE	10K	5%	1/10W

Ref.No.	Part No.	Description			Remark
R223	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R224	1-216-643-11	METAL CHIP	470	0.50%	1/10W
R225	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R226	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R227	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R228	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R229	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R230	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R231	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R232	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R233	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R234	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R235	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R236	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R237	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R238	1-216-045-00	METAL GLAZE	680	5%	1/10W
R239	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R240	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R241	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R242	1-216-009-00	METAL GLAZE	22	5%	1/10W
R243	1-216-025-00	METAL GLAZE	100	5%	1/10W
R244	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R245	1-216-025-00	METAL GLAZE	100	5%	1/10W
R246	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R247	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R248	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R250	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R251	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R252	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R253	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R254	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R255	1-216-643-11	METAL CHIP	470	0.50%	1/10W
R256	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R257	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R258	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R259	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R260	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R261	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R262	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R263	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R264	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R265	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R266	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R267	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R268	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R269	1-216-045-00	METAL GLAZE	680	5%	1/10W
R270	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R271	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R272	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R273	1-216-009-00	METAL GLAZE	22	5%	1/10W
R274	1-216-025-00	METAL GLAZE	100	5%	1/10W
R275	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R276	1-216-025-00	METAL GLAZE	100	5%	1/10W
R277	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R278	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R279	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R281	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R282	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R283	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R284	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R285	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R286	1-216-643-11	METAL CHIP	470	0.50%	1/10W
R287	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R288	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R289	1-216-049-00	METAL GLAZE	1K	5%	1/10W

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Ref.No.	Part No.	Description			Remark
R290	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R291	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R292	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R293	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R294	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R295	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R296	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R297	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R298	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R299	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W
R300	1-216-045-00	METAL GLAZE	680	5%	1/10W
R301	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R302	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R303	1-216-309-00	METAL GLAZE	5.6	5%	1/10W
R304	1-216-009-00	METAL GLAZE	22	5%	1/10W
R305	1-216-045-00	METAL GLAZE	680	5%	1/10W
R306	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R307	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R308	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R309	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R310	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R311	1-216-039-00	METAL GLAZE	390	5%	1/10W
R312	1-216-033-00	METAL GLAZE	220	5%	1/10W
R313	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R314	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R315	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R316	1-216-033-00	METAL GLAZE	220	5%	1/10W
R317	1-216-033-00	METAL GLAZE	220	5%	1/10W
R318	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R319	1-216-025-00	METAL GLAZE	100	5%	1/10W
R320	1-216-033-00	METAL GLAZE	220	5%	1/10W
R321	1-216-047-00	METAL GLAZE	820	5%	1/10W
R322	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R325	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R326	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W
R327	1-216-041-00	METAL GLAZE	470	5%	1/10W
R328	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R329	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R330	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R331	1-216-025-00	METAL GLAZE	100	5%	1/10W
R332	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R333	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R334	1-216-025-00	METAL GLAZE	100	5%	1/10W
R335	1-216-037-00	METAL GLAZE	330	5%	1/10W
R336	1-216-041-00	METAL GLAZE	470	5%	1/10W
R339	1-216-295-00	METAL GLAZE	0	5%	1/10W
R351	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R352	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R353	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R354	1-216-025-00	METAL GLAZE	100	5%	1/10W
R355	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R356	1-216-047-00	METAL GLAZE	820	5%	1/10W
R357	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R358	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R359	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R360	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R361	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R362	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R363	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R364	1-216-025-00	METAL GLAZE	100	5%	1/10W
R365	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R366	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R367	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R368	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R369	1-216-025-00	METAL GLAZE	100	5%	1/10W

Ref.No.	Part No.	Description			Remark
R370	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R371	1-216-047-00	METAL GLAZE	820	5%	1/10W
R372	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R373	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R374	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R375	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R376	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R377	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R378	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R379	1-216-025-00	METAL GLAZE	100	5%	1/10W
R380	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R381	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R382	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R383	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R384	1-216-025-00	METAL GLAZE	100	5%	1/10W
R385	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R386	1-216-047-00	METAL GLAZE	820	5%	1/10W
R387	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R388	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R389	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R390	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R391	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R392	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W
R393	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R394	1-216-025-00	METAL GLAZE	100	5%	1/10W
R395	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R396	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R397	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R398	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R399	1-216-037-00	METAL GLAZE	330	5%	1/10W
R400	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R401	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R402	1-216-025-00	METAL GLAZE	100	5%	1/10W
R403	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R404	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R405	1-216-047-00	METAL GLAZE	820	5%	1/10W
R406	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R407	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R408	1-216-047-00	METAL GLAZE	820	5%	1/10W
R409	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R410	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R411	1-216-047-00	METAL GLAZE	820	5%	1/10W
R412	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R413	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R414	1-216-041-00	METAL GLAZE	470	5%	1/10W
R415	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R416	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R417	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R418	1-216-025-00	METAL GLAZE	100	5%	1/10W
R419	1-216-025-00	METAL GLAZE	100	5%	1/10W
R420	1-216-037-00	METAL GLAZE	330	5%	1/10W
R421	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R424	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R425	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R426	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R427	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R428	1-216-013-00	METAL GLAZE	33	5%	1/10W
R429	1-216-031-00	METAL GLAZE	180	5%	1/10W
R430	1-216-031-00	METAL GLAZE	180	5%	1/10W
R431	1-216-013-00	METAL GLAZE	33	5%	1/10W
R432	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R433	1-216-025-00	METAL GLAZE	100	5%	1/10W
R434	1-216-039-00	METAL GLAZE	390	5%	1/10W
R435	1-216-035-00	METAL GLAZE	270	5%	1/10W
R436	1-216-029-00	METAL GLAZE	150	5%	1/10W

Ref.No.	Part No.	Description			Remark
R437	1-216-029-00	METAL GLAZE	150	5%	1/10W
R438	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R439	1-216-025-00	METAL GLAZE	100	5%	1/10W
R440	1-216-039-00	METAL GLAZE	390	5%	1/10W
R441	1-216-035-00	METAL GLAZE	270	5%	1/10W
R442	1-216-029-00	METAL GLAZE	150	5%	1/10W
R443	1-216-029-00	METAL GLAZE	150	5%	1/10W
R444	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R445	1-216-013-00	METAL GLAZE	33	5%	1/10W
R446	1-216-029-00	METAL GLAZE	150	5%	1/10W
R447	1-216-029-00	METAL GLAZE	150	5%	1/10W
R448	1-216-013-00	METAL GLAZE	33	5%	1/10W
R449	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R450	1-216-013-00	METAL GLAZE	33	5%	1/10W
R451	1-216-029-00	METAL GLAZE	150	5%	1/10W
R452	1-216-029-00	METAL GLAZE	150	5%	1/10W
R453	1-216-013-00	METAL GLAZE	33	5%	1/10W
R454	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R455	1-216-013-00	METAL GLAZE	33	5%	1/10W
R456	1-216-029-00	METAL GLAZE	150	5%	1/10W
R457	1-216-029-00	METAL GLAZE	150	5%	1/10W
R458	1-216-013-00	METAL GLAZE	33	5%	1/10W
R459	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R460	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R461	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R462	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R463	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R464	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R465	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R466	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R467	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R468	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R469	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R470	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R471	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R472	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R473	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R474	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R475	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R476	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R477	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R478	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R479	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R480	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R934	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R935	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R936	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R937	1-216-651-11	METAL CHIP	1K	0.50%	1/10W
R938	1-216-025-00	METAL GLAZE	100	5%	1/10W
R939	1-216-655-11	METAL CHIP	1.5K	0.50%	1/10W
R940	1-216-657-11	METAL CHIP	1.8K	0.50%	1/10W
R941	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R942	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R943	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R944	1-216-659-11	METAL CHIP	2.2K	0.50%	1/10W
R945	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R946	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R947	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R948	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R949	1-216-661-11	METAL CHIP	2.7K	0.50%	1/10W
R950	1-216-653-11	METAL CHIP	1.2K	0.50%	1/10W
R980	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R981	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R982	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R983	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R984	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R985	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R986	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R987	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R988	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R990	1-216-041-00	METAL GLAZE	470	5%	1/10W
R991	1-216-109-00	METAL GLAZE	330K	5%	1/10W
R992	1-216-047-00	METAL GLAZE	820	5%	1/10W
R993	1-216-685-11	METAL CHIP	27K	0.50%	1/10W
R994	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R995	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R996	1-216-133-00	METAL GLAZE	3.3M	5%	1/10W
R997	1-216-041-00	METAL GLAZE	470	5%	1/10W
R998	1-216-039-00	METAL GLAZE	390	5%	1/10W
R999	1-216-049-00	METAL GLAZE	1K	5%	1/10W

VARIABLE RESISTORS

RV1	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV2	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV4	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV5	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV6	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV7	1-228-995-00	RES, ADJ, METAL GLAZE 22K
RV10	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV11	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV12	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV13	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV14	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV15	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV16	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K
RV17	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV19	1-228-995-00	RES, ADJ, METAL GLAZE 22K
RV20	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV21	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV23	1-228-990-00	RES, ADJ, METAL GLAZE 1K
RV24	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV25	1-228-994-00	RES, ADJ, METAL GLAZE 10K
RV26	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV28	1-228-996-00	RES, ADJ, METAL GLAZE 47K
RV29	1-228-993-00	RES, ADJ, METAL GLAZE 4.7K
RV30	1-230-504-11	RES, ADJ, METAL GLAZE 220
RV31	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV32	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV33	1-230-504-11	RES, ADJ, METAL GLAZE 220
RV34	1-230-504-11	RES, ADJ, METAL GLAZE 220
RV35	1-230-504-11	RES, ADJ, METAL GLAZE 220
RV996	1-228-991-00	RES, ADJ, METAL GLAZE 2.2K
RV998	1-228-989-00	RES, ADJ, METAL GLAZE 470
RV999	1-228-996-00	RES, ADJ, METAL GLAZE 47K
W1	*1-945-736-12	HARNESS, BOARD IN (CN1)
W11	*1-945-737-12	HARNESS, BOARD IN (CN11)

CRYSTAL

X2	1-567-192-11	OSCILLATOR, CERAMIC
X997	1-567-504-11	OSCILLATOR, CRYSTAL
X998	1-577-611-11	OSCILLATOR, CERAMIC
X999	1-567-504-11	OSCILLATOR, CRYSTAL

SY-6

Ref.No.	Part No.	Description				Remark
	*A-8271-081-A	COMPLETE PCB, SY-6				

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CAPACITOR

Ref.No.	Part No.	Description				Remark
C601	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C602	1-124-584-00	ELECT	100MF	20%	10V	
C603	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C604	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C605	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C606	1-124-589-11	ELECT	47MF	20%	16V	
C607	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C608	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C609	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C610	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C611	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C614	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C615	1-126-157-11	ELECT	10MF	20%	16V	
C616	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C617	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C618	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C619	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C622	1-124-589-11	ELECT	47MF	20%	16V	
C623	1-124-589-11	ELECT	47MF	20%	16V	
C624	1-124-589-11	ELECT	47MF	20%	16V	
C625	1-124-589-11	ELECT	47MF	20%	16V	
C626	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C627	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C628	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C629	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C630	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C631	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C632	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C633	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C634	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C635	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C636	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C637	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C638	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C641	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C642	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C643	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C644	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C645	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C646	1-124-584-00	ELECT	100MF	20%	10V	
C647	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C648	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	

CONNECTORS

Ref.No.	Part No.	Description	Remark
CN602	*1-564-011-61	PIN, CONNECTOR 12P	
CN603	1-506-470-11	PIN, CONNECTOR 5P	
CN604	*1-564-009-61	PIN, CONNECTOR 10P	
CN605	*1-564-011-61	PIN, CONNECTOR 12P	
CN606	1-506-475-11	PIN, CONNECTOR 10P	
CN607	1-506-470-11	PIN, CONNECTOR 5P	
CN608	1-506-477-11	PIN, CONNECTOR 12P	
CN609	1-507-967-11	JACK	
CN610	1-563-772-11	SOCKET, D-SUB CONNECTOR 25P	

DIODE

Ref.No.	Part No.	Description	Remark
D601	8-719-800-76	DIODE 1SS226	

FILTERS

Ref.No.	Part No.	Description	Remark
FL601	1-236-619-21	FILTER, LOW PASS	
FL602	1-236-619-21	FILTER, LOW PASS	
FL603	1-236-619-21	FILTER, LOW PASS	
FL604	1-236-619-21	FILTER, LOW PASS	
FL605	1-236-619-21	FILTER, LOW PASS	
FL606	1-236-619-21	FILTER, LOW PASS	
FL607	1-236-619-21	FILTER, LOW PASS	
FL608	1-236-619-21	FILTER, LOW PASS	
FL609	1-236-619-21	FILTER, LOW PASS	
FL610	1-236-619-21	FILTER, LOW PASS	
FL611	1-236-619-21	FILTER, LOW PASS	
FL612	1-236-619-21	FILTER, LOW PASS	
FL613	1-236-619-21	FILTER, LOW PASS	
FL614	1-236-619-21	FILTER, LOW PASS	
FL615	1-236-619-21	FILTER, LOW PASS	
FL616	1-236-619-21	FILTER, LOW PASS	
FL617	1-236-619-21	FILTER, LOW PASS	
FL618	1-236-619-21	FILTER, LOW PASS	
FL619	1-236-619-21	FILTER, LOW PASS	
FL620	1-236-619-21	FILTER, LOW PASS	
FL621	1-236-619-21	FILTER, LOW PASS	
FL622	1-236-619-21	FILTER, LOW PASS	
FL623	1-236-619-21	FILTER, LOW PASS	

IC

Ref.No.	Part No.	Description	Remark
IC601	8-759-239-13	IC TMP90C841AF	
IC602	8-759-505-56	IC WS27C256-UP301EK	
IC603	8-759-007-09	IC MC74HC540N	
IC604	8-759-007-09	IC MC74HC540N	
IC605	8-759-917-06	IC SN74HC574N	
IC606	8-759-917-06	IC SN74HC574N	
IC607	8-759-970-26	IC PST523C	
IC608	8-759-917-06	IC SN74HC574N	
IC609	8-759-148-16	IC CP9252C	
IC610	8-759-916-21	IC SN74HC20N	
IC611	8-759-917-38	IC SN74HC4040N	
IC612	8-759-916-46	IC SN74HC139N	
IC613	8-759-916-25	IC SN74HC32N	
IC614	8-759-916-14	IC SN74HC04N	
IC615	8-759-916-25	IC SN74HC32N	
IC616	8-752-324-41	IC CXK1013P	
IS602	1-526-659-00	SOCKET, IC (DP) 28P	

TRANSISTORS

Ref.No.	Part No.	Description	Remark
Q601	8-729-100-66	TRANSISTOR 2SC1623	
Q602	8-729-100-66	TRANSISTOR 2SC1623	

RESISTORS

Ref.No.	Part No.	Description			Remark
R601	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R602	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R603	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R604	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R605	1-216-041-00	METAL GLAZE	470	5%	1/10W
R606	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R608	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R609	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R610	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R611	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R612	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R613	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R614	1-216-049-00	METAL GLAZE	1K	5%	1/10W

Ref.No.	Part No.	Description			Remark
R615	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R616	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R617	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R618	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R619	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R620	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R621	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R622	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R623	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R624	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R625	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R626	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R627	1-216-295-00	METAL GLAZE	0	5%	1/10W
R628	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R629	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R630	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R631	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R632	1-216-025-00	METAL GLAZE	100	5%	1/10W
R633	1-216-041-00	METAL GLAZE	470	5%	1/10W
R634	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R635	1-216-089-00	METAL GLAZE	47K	5%	1/10W

SWITCHES

S601	1-553-856-00	SWITCH, KEY BOARD
S602	1-571-790-11	SWITCH, DIP 8P
W601	*1-945-744-11	HARNESS, BOARD IN (CN601)

CRYSTAL

X601	1-567-869-11	VIBRATOR, CERAMIC

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*1-634-724-12 PC BOARD, PTC-13

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	*1-945-763-11	HARNESS, SENSOR (TRL)
	3-737-916-02	COVER, SENSOR

DIODE

D1202	8-719-820-46	DIODE TLN-107A

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*1-634-726-12 PC BOARD, PTC-15

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	3-737-916-02	COVER, SENSOR

TRANSISTOR

PH1215	8-729-822-57	PHOTO TRANSISTOR TPS607A
W1212	*1-945-764-12	HARNESS, SENSOR (TRS)

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*A-8276-098-A MOUNTED PCB, DUS-3

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CAPACITORS

Ref.No.	Part No.	Description			Remark
C801	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C802	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C803	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C804	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C805	1-130-493-00	MYLAR	0.068MF	5%	50V
C806	1-130-485-00	MYLER	0.015MF	5%	50V
C807	1-124-257-00	ELECT	2.2MF	20%	50V
C808	1-124-589-11	ELECT	47MF	20%	16V
C809	1-126-157-11	ELECT	10MF	20%	16V
C810	1-126-157-11	ELECT	10MF	20%	16V
C812	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C813	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C814	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C815	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C816	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C817	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C818	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C819	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C820	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C821	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C822	1-126-157-11	ELECT	10MF	20%	16V
C823	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C824	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C825	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C826	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C827	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C828	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C829	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C830	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C831	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C832	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C833	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C834	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C835	1-126-160-11	ELECT	1MF	20%	50V
C836	1-126-157-11	ELECT	10MF	20%	16V
C837	1-126-157-11	ELECT	10MF	20%	16V
C838	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C839	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V
C840	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V

CONNECTORS

CN801	*1-506-468-11	PIN, CONNECTOR 3P
CN802	*1-506-468-11	PIN, CONNECTOR 3P
CN804	1-562-719-11	SOCKET, CONNECTOR 10P
CN805	*1-564-020-61	PIN, CONNECTOR 10P
CN806	*1-568-952-11	PIN, CONNECTOR 3P
CN807	*1-568-952-11	PIN, CONNECTOR 3P
CN808	*1-568-952-11	PIN, CONNECTOR 3P
CN809	*1-568-952-11	PIN, CONNECTOR 3P
CN810	*1-568-954-11	PIN, CONNECTOR 5P
CN812	*1-506-468-11	PIN, CONNECTOR 3P
CN813	*1-568-952-11	PIN, CONNECTOR 3P
CN814	*1-568-952-11	PIN, CONNECTOR 3P
CN815	*1-568-952-11	PIN, CONNECTOR 3P
CN816	*1-568-952-11	PIN, CONNECTOR 3P
CN817	*1-568-952-11	PIN, CONNECTOR 3P
CN818	*1-568-952-11	PIN, CONNECTOR 3P
CN819	*1-568-952-11	PIN, CONNECTOR 3P
CN820	*1-568-955-11	PIN, CONNECTOR 6P
CN821	*1-506-471-11	PIN, CONNECTOR 6P
CN822	*1-568-952-11	PIN, CONNECTOR 3P

DIODES

D801	8-719-911-19	DIODE 1SS119
D802	8-719-911-19	DIODE 1SS119

DUS-3

IC

Ref.No.	Part No.	Description	Remark
IC801	8-759-633-10	IC M54544AL	
IC802	8-759-904-68	IC CX891	
IC803	8-759-633-10	IC M54544AL	
IC804	8-759-008-72	IC LM393N	
IC805	8-759-991-17	IC LM324N	
IC806	8-759-984-03	IC LM339N	

FILTERS

Ref.No.	Part No.	Description	Remark
L801	1-424-102-11	COIL, LINE FILTER	
L802	1-424-102-11	COIL, LINE FILTER	

TRANSISTORS

Ref.No.	Part No.	Description	Remark
Q801	8-729-111-67	TRANSISTOR 2SB1274-RS	
Q802	8-729-111-67	TRANSISTOR 2SB1274-RS	
Q803	8-729-100-66	TRANSISTOR 2SC1623	
Q804	8-729-140-96	TRANSISTOR 2SD774-34	
Q805	8-729-100-66	TRANSISTOR 2SC1623	
Q806	8-729-100-66	TRANSISTOR 2SC1623	
Q807	8-729-100-66	TRANSISTOR 2SC1623	

RESISTORS

Ref.No.	Part No.	Description			Remark
R801	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R802	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R803	1-216-031-00	METAL GLAZE	180	5%	1/10W
R804	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R805	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R806	1-249-480-11	CARBON	3.3	5%	1/2W F
R807	1-216-033-00	METAL GLAZE	220	5%	1/10W
R808	1-216-039-00	METAL GLAZE	390	5%	1/10W
R809	1-216-033-00	METAL GLAZE	220	5%	1/10W
R810	1-216-017-00	METAL GLAZE	47	5%	1/10W
R811	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R812	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R813	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R814	1-216-045-00	METAL GLAZE	680	5%	1/10W
R815	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R816	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R817	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R818	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R819	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R820	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R821	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R822	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R823	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R824	1-216-043-00	METAL GLAZE	560	5%	1/10W
R825	1-216-045-00	METAL GLAZE	680	5%	1/10W
R826	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R827	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R828	1-216-037-00	METAL GLAZE	330	5%	1/10W
R829	1-216-045-00	METAL GLAZE	680	5%	1/10W
R830	1-216-043-00	METAL GLAZE	560	5%	1/10W
R831	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R832	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R833	1-216-041-00	METAL GLAZE	470	5%	1/10W
R834	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R835	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R836	1-216-041-00	METAL GLAZE	470	5%	1/10W
R837	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R838	1-216-041-00	METAL GLAZE	470	5%	1/10W
R839	1-216-041-00	METAL GLAZE	470	5%	1/10W
R840	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R841	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R842	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R843	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R844	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R845	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R846	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R847	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R848	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R849	1-216-043-00	METAL GLAZE	560	5%	1/10W
R850	1-216-043-00	METAL GLAZE	560	5%	1/10W
R851	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R852	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R853	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R854	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R855	1-216-041-00	METAL GLAZE	470	5%	1/10W
R856	1-216-105-00	METAL GLAZE	220K	5%	1/10W
R857	1-216-035-00	METAL GLAZE	270	5%	1/10W
R858	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R859	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R860	1-216-045-00	METAL GLAZE	680	5%	1/10W
R862	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R864	1-216-047-00	METAL GLAZE	820	5%	1/10W
R865	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R866	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R867	1-216-033-00	METAL GLAZE	220	5%	1/10W
R868	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R869	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R870	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R871	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R874	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R875	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R876	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R877	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R878	1-216-041-00	METAL GLAZE	470	5%	1/10W
R879	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R880	1-216-748-11	METAL GLAZE	39K	5%	1/10W
R881	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R882	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R883	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R884	1-216-037-00	METAL GLAZE	330	5%	1/10W
R885	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R886	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R887	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R888	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R889	1-216-085-00	METAL GLAZE	33K	5%	1/10W

VARIABLE RESISTORS

Ref.No.	Part No.	Description	Remark
RV801	1-230-498-11	RES, ADJ, METAL GLAZE 47K	
RV802	1-230-496-11	RES, ADJ, METAL GLAZE 10K	
RV803	1-230-498-11	RES, ADJ, METAL GLAZE 47K	
RV804	1-230-496-11	RES, ADJ, METAL GLAZE 10K	
RV805	1-228-996-00	RES, ADJ, METAL GLAZE 47K	

SWITCH

Ref.No.	Part No.	Description	Remark
S801	1-552-334-00	SWITCH, BAND CHANGER	

THERMISTOR

Ref.No.	Part No.	Description	Remark
TH801	1-807-796-11	THERMISTOR	
W803	*1-945-748-11	HARNESS, BOARD IN (CN803)	
W811	*1-945-749-11	HARNESS, BOARD IN (CN811)	

SW-21 PTC-12 SW-20 SW-15 SW-18 PTC-14 SW-14 SW-19 SW-16

Ref.No.	Part No.	Description	Remark
***			
	*1-634-721-12	PC BOARD, SW-21	
		********************	
	*1-945-768-11	HARNESS, SENSOR (RSS)	
		DIODES	
PH1209	8-719-941-47	DIODE GP2S05	
PH1210	8-719-941-47	DIODE GP2S05	
PH1211	8-719-941-47	DIODE GP2S05	
PH1212	8-719-941-47	DIODE GP2S05	
		RESISTORS	
R1201	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R1202	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R1203	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R1204	1-216-047-00	METAL GLAZE 820 5% 1/10W	
***			
	*1-643-723-12	PC BOARD, PTC-12	
		********************	
	*1-945-756-11	HARNESS, SENSOR (RML)	
	3-737-916-02	COVER, SENSOR	
		DIODE	
D1201	8-719-820-46	DIODE TLN-107A	
***			
	*1-634-720-12	PC BOARD, SW-20	
		********************	
	*1-945-767-11	HARNESS, SENSOR (IBS)	
		DIODE	
PH1208	8-719-941-47	DIODE GP2S05	
***			
	*1-634-713-12	PC BOARD, SW-15	
		********************	
	*1-945-760-11	HARNESS, SENSOR (EJC)	
		DIODE	
PH1202	8-719-913-55	DIODE GP-2S04-B	
***			
	*1-634-716-12	PC BOARD, SW-18	
		********************	
	*1-945-762-11	HARNESS, SENSOR (SS)	
		DIODE	
PH1206	8-719-941-47	DIODE GP2S05	
***			
	*1-634-725-12	PC BOARD, PTC-14	
		********************	
	*1-945-757-11	HARNESS, SENSOR (RMS)	
	3-737-916-02	COVER, SENSOR	
		DIODE	
PH1214	8-729-822-57	PHOTO TRANSISTOR TPS607A	
***			
	*1-634-712-12	PC BOARD, SW-14	
		********************	
	*1-945-758-11	HARNESS, SENSOR (PM)	
		DIODE	
PH1201	8-719-941-47	DIODE GP2S05	
***			
	*1-634-719-12	PC BOARD, SW-19	
		********************	
	*1-945-766-11	HARNESS, SENSOR (ITS)	
		DIODE	
PH1207	8-719-941-47	DIODE GP2S05	
***			
	*1-634-714-12	PC BOARD, SW-16	
		********************	
	*1-945-759-11	HARNESS, SENSOR (FG)	
		DIODE	
PH1203	8-719-906-43	DIODE GP-1S03	
***			

SW-22 S-14 KY-5 DC-2 DC-3

Ref.No.	Part No.	Description			Remark
	*1-634-722-12	PC BOARD, SW-22			

****

Ref.No.	Part No.	Description			Remark
	*1-945-769-11	HARNESS, SENSOR (PMD)			

DIODE

Ref.No.	Part No.	Description			Remark
PH1213	8-719-941-47	DIODE GP2S05			

****

Ref.No.	Part No.	Description			Remark
	*A-8276-109-A	MOUNTED PCB, S-14			

****

CAPACITORS

Ref.No.	Part No.	Description			Remark
C1001	1-124-589-11	ELECT	47MF	20%	16V
C1002	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C1003	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V
C1004	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V

CONNECTOR

Ref.No.	Part No.	Description			Remark
CN1002	*1-568-941-11	PIN, CONNECTOR 3P			

DIODES

Ref.No.	Part No.	Description			Remark
D1001	8-719-975-93	DIODE MBG4868K			
D1002	8-719-800-76	DIODE 1SS226			

IC

Ref.No.	Part No.	Description			Remark
IC1001	8-749-900-69	IC BX-1457			
IC1002	8-759-008-72	IC LM393N			

TRANSISTOR

Ref.No.	Part No.	Description			Remark
Q1001	8-729-900-98	TRANSISTOR DTC143TK			

RESISTORS

Ref.No.	Part No.	Description			Remark
R1001	1-216-029-00	METAL GLAZE	150	5%	1/10W
R1002	1-216-017-00	METAL GLAZE	47	5%	1/10W
R1003	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R1004	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R1005	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R1006	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R1007	1-216-049-00	METAL GLAZE	1K	5%	1/10W
W1001	*1-945-751-11	HARNESS, BOARD IN (CN1001)			

****

Ref.No.	Part No.	Description			Remark
	*A-8276-111-A	MOUNTED PCB, KY-5			

****

Ref.No.	Part No.	Description			Remark
	3-745-707-01	HOLDER, LED			

CAPACITORS

Ref.No.	Part No.	Description			Remark
C901	1-164-232-11	CERAMIC CHIP	0.01MF	5%	50V
C902	1-164-232-11	CERAMIC CHIP	0.01MF	5%	50V
C903	1-164-232-11	CERAMIC CHIP	0.01MF	5%	50V
C904	1-164-232-11	CERAMIC CHIP	0.01MF	5%	50V
C905	1-164-232-11	CERAMIC CHIP	0.01MF	5%	50V

DIODES

Ref.No.	Part No.	Description			Remark
D901	8-719-985-23	DIODE GL4HD8			
D902	8-719-975-90	DIODE GL4HS8			

TRANSISTOR

Ref.No.	Part No.	Description			Remark
Q901	8-729-900-98	TRANSISTOR DTC143TK			
Q902	8-729-900-98	TRANSISTOR DTC143TK			

RESISTORS

Ref.No.	Part No.	Description			Remark
R901	1-216-033-00	METAL GLAZE	220	5%	1/10W
R902	1-216-033-00	METAL GLAZE	220	5%	1/10W
R903	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R904	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R905	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R906	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R907	1-216-071-91	METAL GLAZE	8.2K	5%	1/10W
R908	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R909	1-216-071-91	METAL GLAZE	8.2K	5%	1/10W
R910	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R911	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R912	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R913	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R914	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R915	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R916	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R917	1-216-089-00	METAL GLAZE	47K	5%	1/10W

SWITCHES

Ref.No.	Part No.	Description			Remark
S901	1-570-313-11	SWITCH, KEY BOARD			
S902	1-570-313-11	SWITCH, KEY BOARD			
S903	1-570-313-11	SWITCH, KEY BOARD			
S904	1-570-313-11	SWITCH, KEY BOARD			
S905	1-570-313-11	SWITCH, KEY BOARD			
S906	1-570-313-11	SWITCH, KEY BOARD			
S907	1-570-313-11	SWITCH, KEY BOARD			
S908	1-570-313-11	SWITCH, KEY BOARD			
S909	1-570-313-11	SWITCH, KEY BOARD			
S910	1-570-313-11	SWITCH, KEY BOARD			
W901	1-945-750-11	HARNESS, BOARD IN (CN901)			

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Ref.No.	Part No.	Description			Remark
	*1-634-729-12	PC BOARD, DC-2			

****

IC

Ref.No.	Part No.	Description			Remark
IC1201	8-759-982-13	IC RC7812FA			

****

Ref.No.	Part No.	Description			Remark
	*1-634-730-12	PC BOARD, DC-3			

****

IC

Ref.No.	Part No.	Description			Remark
IC1202	8-759-982-10	IC RC7809FA			

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The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

SW-17 S-15 DSC-4 SW-REG A

Ref.No.	Part No.	Description			Remark
	*1-634-715-12	PC BOARD, SW-17			

****

Ref.No.	Part No.	Description			Remark
	*1-945-761-11	HARNESS, SENSOR (HP)			

DIODE

Ref.No.	Part No.	Description			Remark
PH1204	8-719-913-55	DIODE GP-2S04-B			
PH1205	8-719-913-55	DIODE GP-2S04-B			

****

Ref.No.	Part No.	Description			Remark
	*1-634-711-12	PC BOARD, S-15			

****

Ref.No.	Part No.	Description			Remark
	*1-945-765-11	HARNESS, SENSOR (RCS)			

SWITCH

Ref.No.	Part No.	Description			Remark
S1201	1-570-953-11	SWITCH, PUSH (1 KEY)			

****

Ref.No.	Part No.	Description			Remark
	*A-8276-127-A	MOUNTED PCB, DSC-4			

****

Ref.No.	Part No.	Description			Remark
	*1-945-772-11	HARNESS (C)			

CAPACITORS

Ref.No.	Part No.	Description			Remark
C1101	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1102	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1103	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1104	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1105	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1106	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1107	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1108	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C1109	1-163-038-00	CERAMIC CHIP	0.1MF		25V

RESISTORS

Ref.No.	Part No.	Description			Remark
R1101	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R1102	1-216-295-00	METAL GLAZE	0	5%	1/10W
R1106	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R1107	1-216-295-00	METAL GLAZE	0	5%	1/10W
R1111	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W
R1112	1-216-295-00	METAL GLAZE	0	5%	1/10W
R1116	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W

VARIABLE RESISTORS

Ref.No.	Part No.	Description			Remark
VR1101	1-241-030-11	RES, VAR, CARBON	10K		
VR1102	1-241-030-11	RES, VAR, CARBON	10K		
VR1103	1-241-030-11	RES, VAR, CARBON	10K		
VR1104	1-241-276-11	RES, VAR, CARBON			
VR1105	1-241-276-11	RES, VAR, CARBON			
VR1106	1-241-276-11	RES, VAR, CARBON			
VR1107	1-241-276-11	RES, VAR, CARBON			

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Ref.No.	Part No.	Description		Remark
⚠	1-413-580-11	SWITCHING REGULATOR		
	*9-997-462-01	SWITCHING REGULATOR A BOARD		

****

<CAPACITOR>

Ref.No.	Part No.	Description		Remark
C009	9-997-464-01	CERAMIC	220PF	1KV
C010	1-129-718-00	FILM	0.022MF	630V
C011	9-997-464-01	CERAMIC	220PF	1KV
C012	1-124-482-11	ELECT	33MF	35V
C013	1-106-367-00	FILM	0.01MF	100V
C014	1-102-978-00	CERAMIC	220PF	50V
C015	1-106-383-00	FILM	0.047MF	100V
C016	1-106-367-00	FILM	0.01MF	100V
C017	1-124-482-11	ELECT	33MF	35V
C018	1-106-383-00	FILM	0.047MF	100V
C019	1-129-718-00	FILM	0.022MF	630V
C020	9-997-464-01	CERAMIC	220PF	1KV
C021	9-997-464-01	CERAMIC	220PF	1KV
C022	1-106-367-00	FILM	0.01MF	100V
C023	1-106-383-00	FILM	0.047MF	100V
C024	1-106-377-00	FILM	0.027MF	100V
C025	1-102-978-00	CERAMIC	220PF	50V
C026	1-124-927-11	ELECT	4.7MF	50V
C027	1-106-367-00	FILM	0.01MF	100V
C101	9-997-465-01	CERAMIC	470PF	1KV
C102	9-997-520-01	ELECT	1500MF	25V
C103	1-124-482-11	ELECT	33MF	35V
C202	9-997-520-01	ELECT	1500MF	25V
C203	1-124-482-11	ELECT	33MF	35V
C302	1-124-585-11	ELECT	3300MF	10V
C303	1-124-585-11	ELECT	3300MF	10V
C304	1-106-383-00	FILM	0.047MF	100V
C305	1-124-902-00	ELECT	2.2MF	50V
C306	1-124-585-11	ELECT	3300MF	10V
C401	9-997-465-01	CERAMIC	470PF	1KV
C402	1-124-277-11	ELECT	2200MF	35V
C403	1-124-277-11	ELECT	2200MF	35V
C404	1-124-277-11	ELECT	2200MF	35V
C405	1-106-383-00	FILM	0.047MF	100V
C406	1-124-902-00	ELECT	2.2MF	50V
C407	1-106-367-00	FILM	0.01MF	100V
C408	1-124-482-11	ELECT	33MF	35V

<CONNECTOR>

Ref.No.	Part No.	Description		Remark
CN02	*9-997-483-01	HARNESS, CONNECTOR		
CN03	*9-997-482-01	CONNECTOR		
CN9001	*1-508-797-00	CONNECTOR		
CN9002	*1-508-797-00	CONNECTOR		
CN9003	*1-508-845-00	CONNECTOR		
CN9004	*1-508-846-00	CONNECTOR		
CN9005	*9-998-002-01	CONNECTOR		
CN9006	*1-508-742-00	CONNECTOR		
CN9008	*1-564-505-11	CONNECTOR		

SW-REG A

> The components identified by shading and mark ⚠ are critical for safety.
> Replace only with part numer specified.

<DIODE>

Ref.No.	Part No.	Description	Remark
D002	9-997-993-01	DIODE RG1C	
D003	8-719-951-30	DIODE ERA91-02	
D004	8-719-951-30	DIODE ERA91-02	
D005	8-719-110-83	DIODE RD36ESB2	
D006	8-719-110-17	DIODE RD10ESB2	
D007	8-719-951-30	DIODE ERA91-02	
D008	8-719-110-67	DIODE RD27ESB2	
D010	9-997-993-01	DIODE RG1C	
D011	8-719-911-19	DIODE 1SS119	
D101	8-719-970-39	DIODE ESAB92M-02	
D201	8-719-970-39	DIODE ESAB92M-02	
D301	8-719-971-00	DIODE ESAC85M-009	
D401	8-719-970-39	DIODE ESAC92M-02	
D402	8-719-951-30	DIODE ERA91-02	
D405	8-719-913-44	DIODE ERA82-004	

<IC>

Ref.No.	Part No.	Description	Remark
IC001	9-997-466-01	IC M51995P	
IC002	9-997-466-01	IC M51995P	
IC101	9-997-468-01	IC SI-3152V	
IC201	9-997-469-01	IC SI-3122V	
IC301	9-997-467-01	IC NJM431L	
IC401	9-997-467-01	IC NJM431L	
IC402	8-759-135-80	IC UPC358C	
IC403	9-997-467-01	IC NJM431L	

<COIL>

Ref.No.	Part No.	Description	Remark
L004	1-410-858-11	CORE, FUSE	
L005	1-410-858-11	CORE, FUSE	
L101	1-410-858-11	CORE, FUSE	
L201	1-410-858-11	CORE, FUSE	
L301	1-410-858-11	CORE, FUSE	
L302	9-997-994-01	CORE, DRUM	
L401	1-410-858-11	CORE, FUSE	
L402	1-410-858-11	CORE, FUSE	

<TRANSISTOR>

Ref.No.	Part No.	Description	Remark
Q001	9-998-003-01	TRANSISTOR 2SK1082	
Q002	9-998-003-01	TRANSISTOR 2SK1082	

<RESISTOR>

Ref.No.	Part No.	Description		Remark
R007 ⚠	9-997-477-01	METAL OXIDE	68K	2W F
R008 ⚠	9-997-477-01	METAL OXIDE	68K	2W F
R009 ⚠	9-997-475-01	METAL OXIDE	22	2W F
R010 ⚠	9-997-995-01	METAL OXIDE	150K	3W
R011	9-997-479-01	CEMENT	47	5W
R012 ⚠	9-997-474-01	CARBON	10K	1/4W F
R013 ⚠	9-997-473-01	CARBON	27	1/4W F
R014	9-997-996-01	CEMENT	0.22	2W
R015 ⚠	9-997-470-01	CARBON	33	1/6W F
R016	1-247-696-11	CARBON	47	1/4W F
R017	1-249-429-11	CARBON	10K	1/6W F
R018	1-249-429-11	CARBON	8.2K	1/6W F
R019	1-249-434-11	CARBON	27K	1/6W F
R020	1-212-873-11	FUSIBLE	47	1/4W
R021	9-997-471-01	CARBON	100	1/6W F
R022	9-997-471-01	CARBON	100	1/6W F
R023 ⚠	9-997-473-01	CARBON	27	1/4W F
R024 ⚠	9-997-471-01	CARBON	100	1/6W F
R025	1-249-436-11	CARBON	39K	1/6W F
R026	1-249-436-11	CARBON	39K	1/6W F
R027	1-249-435-11	CARBON	33K	1/6W F
R028	9-997-471-01	CARBON	100	1/6W F
R029 ⚠	9-997-475-01	METAL OXIDE	22	2W F
R030 ⚠	9-997-995-01	METAL OXIDE	150K	3W
R031	9-997-479-01	SEMENT	47	5W
R032 ⚠	9-997-474-01	CARBON	10K	1/4W F
R033 ⚠	9-997-473-01	CARBON	27	1/4W F
R034	9-997-996-01	SEMENT	0.22	2W
R035 ⚠	9-997-472-01	CARBON	150	1/6W F
R036	1-249-435-11	CARBON	33K	1/6W F
R037	1-249-435-11	CARBON	33K	1/6W F
R038 ⚠	9-997-473-01	CARBON	27	1/4W F
R040	1-249-437-11	CARBON	47K	1/6W F
R041	1-249-437-11	CARBON	47K	1/6W F
R042 ⚠	9-997-471-01	CARBON	100	1/6W F
R101	1-215-880-00	METAL OXIDE	10	2W F
R302	1-249-409-11	CARBON	220	1/6W F
R303	1-249-413-11	CARBON	470	1/6W F
R304	1-249-429-11	CARBON	10K	1/6W F
R305	1-249-420-11	CARBON	1.8K	1/6W F
R306	1-249-417-11	CARBON	1K	1/6W F
R401	1-215-880-00	METAL OXIDE	10	2W F
R402	1-249-417-11	CARBON	1K	1/6W F
R403	1-249-413-11	CARBON	470	1/6W F
R404	1-249-429-11	CARBON	10K	1/6W F
R405	1-215-445-00	METAL CHIP	10K	1/6W
R406	1-249-419-11	CARBON	1.5K	1/6W F
R407	1-249-423-11	CARBON	3.3K	1/6W F
R408	9-997-522-01	METAL CHIP	8.25K	1/6W
R409	1-249-425-11	CARBON	4.7K	1/6W F
R410	1-215-445-00	METAL CHIP	10K	1/6W F
R411	1-215-445-00	METAL CHIP	10K	1/6W F
R412	1-215-445-00	METAL CHIP	10K	1/6W F
R413	1-215-445-00	METAL CHIP	10K	1/6W F
R414	1-215-445-00	METAL CHIP	10K	1/6W F
R415	1-249-425-11	CARBON	4.7K	1/6W F
R416	1-249-425-11	CARBON	4.7K	1/6W F
R417	1-247-715-11	CARBON	1.5K	1/4W F
R418	9-998-001-01	FUSIBLE	3.9	1/6W

<TRANSFORMER>

Ref.No.	Part No.	Description	Remark
T001 ⚠	9-997-997-01	CONVERTER, TRANSFORMER	
T002 ⚠	9-997-998-01	CONVERTER, TRANSFORMER	

<VARIABLE RESISTOR>

Ref.No.	Part No.	Description		Remark
VR301	1-228-991-00	RES, ADJ, METAL GLAZE	2K	0.1W
VR401	9-997-999-01	RES, ADJ, GLAZE	2K	0.5W
VR402	1-228-991-00	RES, ADJ, METAL GLAZE	2K	0.1W
VR403	1-228-991-00	RES, ADJ, METAL GLAZE	2K	0.1W

* * *

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

SW-REG B SW-REG C

*9-997-486-01 SWITCHING REGULATOR B BOARD

****

Ref.No.	Part No.	Description		Remark
		<CAPACITOR>		
C307	1-124-902-00	ELECT	0.47MF	50V
		<CONNECTOR>		
CN04	*1-564-820-11	CONNECTOR		
CN05	*9-997-489-01	CONNECTOR		
		<DIODE>		
D102	8-719-110-45	DIODE RD16ESB2		
D103	8-719-911-19	DIODE 1SS119		
D202	8-719-110-36	DIODE RD13ESB2		
D203	8-719-911-19	DIODE 1SS119		
D302	8-719-109-85	DIODE RD5.1ESB2		
D303	8-719-911-19	DIODE 1SS119		
D403	8-719-110-67	DIODE RD27ESB2		
D404	8-719-911-19	DIODE 1SS119		
		<PHOTO COUPLER>		
PC001 ⚠	9-997-987-01	PHOTO COUPLER PC101N		
PC002 ⚠	9-997-987-01	PHOTO COUPLER PC101N		
PC003 ⚠	9-997-987-01	PHOTO COUPLER PC101N		
		<RESISTOR>		
R307	1-249-401-11	CARBON	47	1/6W F

****

*9-997-490-01 SWITCHING REGULATOR C BOARD

****

		<CAPACITOR>		
C001	9-997-988-01	FILM	0.47MF	250V
C002 ⚠	9-997-463-01	CERAMIC	2200PF	
C003 ⚠	9-997-463-01	CERAMIC	2200PF	
C004	9-997-988-01	FILM	0.47MF	250V
C005 ⚠	9-997-492-01	CERAMIC	1000PF	
C006	9-902-338-01	ELECT	220MF	400V
C007	9-902-338-01	ELECT	220MF	400V
C008	1-106-375-12	FILM	0.022MF	100V
		<CONNECTOR>		
CN01 ⚠	*9-997-504-01	CONNECTOR		
CN9007 ⚠	*9-997-505-01	CONNECTOR		

Ref.No.	Part No.	Description		Remark
		<DIODE>		
D001	8-719-312-05	DIODE RBV-606		
D009	8-719-951-30	DIODE ERA91-02		
		<FUSE>		
F001 ⚠	9-997-989-01	FUSE 3.15A 250V		
		<FUSIBLE RESISTOR>		
FR001 ⚠	9-997-990-01	FUSIBLE RESISTER 33		5W
FR002 ⚠	9-997-990-01	FUSIBLE RESISTER 33		5W
		<COIL>		
L001 ⚠	9-998-976-01	CORE		
L002 ⚠	9-997-991-01	LINE FILTER	1.7A	6mH
L003 ⚠	9-997-991-01	LINE FILTER	1.7A	6mH
L006	1-410-858-11	INDUCTOR SMALL TYPE		
		<RESISTOR>		
R001 ⚠	9-997-499-01	CARBON	330K	1/2W F
R002	1-249-417-11	CARBON	1K	1/6W F
R003 ⚠	9-997-501-01	METAL OXIDE	47	1W F
R004 ⚠	9-997-501-01	METAL OXIDE	47	1W F
R005 ⚠	9-997-992-01	METAL OXIDE	220K	3W
R006 ⚠	9-997-992-01	METAL OXIDE	220K	3W
		<THYRISTOR>		
SR001	9-997-503-01	THYRISTOR	6A	600W

****

MISCELLANEOUS

****

	1-161-772-11	SEMICONDUCTOR CAPACITOR,	0.1MF X
	1-507-195-21	JACK, SPECIAL REMOTE CONTROL	
	1-543-774-11	HEAD,THERMAL (TH66207)	
	1-557-637-11	CABLE, COMMANDER	
	1-562-261-41	CONNECTOR, RECEPTACLE (BNC)	
	*1-535-316-11	TERMINAL, GROUND (M4)	
	1-575-854-11	WIRE, FLAT (FFC.CON) (8 CORE)	
	1-575-855-11	WIRE, FLAT (FFC.CON) (10 CORE)	
⚠	1-556-760-11	CORD, POWER (3 CORE)	
	*1-945-752-11	HARNESS, SHIELD (A)	
	*1-945-753-11	HARNESS, SHIELD (B)	
	*1-945-754-11	HARNESS, SHIELD (C)	
	*1-945-755-11	HARNESS, SHIELD (D)	
	*1-945-770-11	HARNESS (A)	
	*1-945-771-12	HARNESS (B)	
	*1-945-735-11	HARNESS (AC)	
	*1-945-774-11	HARNESS (E)	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part numer specified.

Ref.No.	Part No.	Description	Remark
CNJ1902	*1-465-508-11	COMMANDER, REMOTE	
CNJ1901⚠	1-560-222-11	INLET 3P	
J709,710	1-569-803-11	CONNECTOR, S TERMINAL 4P	
M1901	A-8262-171-A	MOTOR ASSY (PLATEN DRIVING)	
M1902	A-8262-171-A	MOTOR ASSY (T HEAD UP/DOWN)	
M1903	1-541-684-12	MOTOR, DC (FAN)	
M1904	1-541-684-12	MOTOR, DC (FAN)	
S1901⚠	A-8262-172-A	SWITCH ASSY (AC POWER)	
⚠	1-413-580-11	REGULATOR, SWITCHING	

****

ACCESSORIES AND PACKING MATERIALS
****

	1-465-508-11	COMMANDER, REMOTE
⚠	1-556-760-11	CORD, POWER (3 CORE)
	1-557-637-11	CABLE, COMMANDER
	3-166-278-01	INDIVIDUAL CARTON
	*3-694-922-01	SHEET, PROTECTION
	*3-701-624-00	BAG, POLYETHYLENE
	*3-701-628-00	BAG, POLYETHYLENE
	*3-701-630-00	BAG, POLYETHYLENE
	*3-745-752-01	CUSHION
	3-751-622-41	MANUAL, INSTRUCTION
	*A-8262-176-A	TRAY ASSY, UPPER

****

HARDWARE LIST
****

SCREWS

7-621-775-10	+B 2.6X4
7-682-547-04	+BVTT 3X6, (S TIGHT)
7-682-547-09	+BV 3X6, (S TIGHT)
7-682-548-04	+BVTT 3X8, (S TIGHT)
7-682-561-04	+B 4X8
7-682-646-09	+PS 3X5
7-682-661-09	+PSW 4X8
7-682-666-09	+PS 4X20
7-682-948-01	+PSW 3X8
7-682-954-01	+PSW 3X25
7-685-106-01	+P 2X10, TYPE 1
7-685-134-01	+P 2.6X8, TYPE 1

E-RING

7-624-105-04	E-RING 2.3
7-624-106-04	E-RING 3.0
7-624-109-04	E-RING 5.0

UP-3000P

SONY
SERVICE MANUAL

AEP Model
UK Model
Germany Model

SUPPLEMENT-1

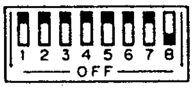
Subject; CIRCUIT DESCRIPTION

File this Supplement with the Service Manual.

Printing system	Sublimation heat transfer printing
Picture elements	716 × 564 PELS 750 × 582 PELS
Total gradation	256 levels each for yellow, magenta, and cyan
Printing time	Approx. 90 seconds for color printing and approx. 50 seconds for B & W printing
TV system	PAL (B,G,I) standards
Video signal	INPUT (Video input terminals) RGB SYNC (Analog RGB video signal) BNC connector, 0.7Vp-p, 75 ohms S VIDEO (Separate luminance(Y) and chrominance(C) signals) Y: 1Vp-p C: 0.29Vp-p, 75 ohms VIDEO (PAL composite video signal) BNC connector, 1Vp-p 75 ohms negative MONITOR OUT (Video output terminals) RGB SYNC (Analog RGB video signal) BNC connector RGB: 0.7Vp-p, 75 ohms terminated SYNC: 1Vp-p S VIDEO (Separate luminance(Y) and chrominance(C) signals) Y: 1Vp-p, 75 ohms terminated C:0.29Vp-p, 75 ohms terminated VIDEO (PAL composite video signal) BNC connector, 1Vp-p, 75 ohms negative Remote control terminal (Front panel, for the supplied remote control unit only) Special mini jack CONTROL (Terminal for the foot switch FS-20, not supplied) Stereo mini jack RS-232C (Computer control interface) 25-pin connector

Ink ribbon cassette and printing paper	Color printing pack UPC-3010P (for 80 prints)
Power requirements	200 ~ 240 V AC, 50/60Hz
Power consumption	1.5A Max
Operating temperature	5°C to 35°C (41°F to 95°F)
Dimensions	Approx. 430 × 125 × 435 mm (w/h/d) (17 × 5 × 17 1/8 inches)
Weight	Approx. 10kg (22 lb)
Supplied accessories	Color printing pack (1) Paper tray (1) AC power cord (1) Remote control unit (1) Connecting cable for remote control unit (1) Dry battery SUM-3 (NU) (2) Operating instructions (1)

Configuration of the DIP switch



1 Reserved
2 Reserved
3 Reserved
4 Selects the type of image after pressing the PRINT button.
ON: Memory image
OFF: Playback image
5 ON: Wide mode
OFF: Usually set at this position
6 Reserved
7, 8 Changes the settings for the baud rate of RS-232C.

7	8	Baud rate (bits per second)
OFF	OFF	1200
ON	OFF	2400
OFF	ON	4800*
ON	ON	9600

* The baud rate is factory-set to 4800.

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS INDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COPMONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

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SECTION 1
GENERAL

1-1. MAIN FEATURES

- **High Picture Quality with Horizontal Resolution of 500 Lines or More**
  Input video signal conversion into 8 bit digital signals (256 gradations for each color) for a total of 16,700,000 color hues, and high picture quality full color print capability with the horizontal resolution in excess of 500 lines are realized.

- **Printout of 4¼"×5¾" (A6 size)**
  A6 size, which is nearly the size of a postcard, can be printed for ideal data sheet attachment to a report and carte. This size printout is also convenient for filing.

- **Meeting Various Video Signals**
  Not only a composite signal, but also analog RGB and S video signals can be applied.

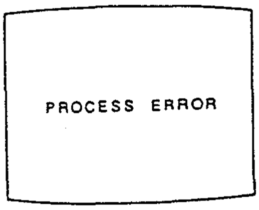
- **Versatile Print Mode**
  Permits desired print mode selection according to applications and purposes such as the full size, composite mode, 4-division and 25-division (the same screen image).

- **Caption Input Capability**
  Alphanumeric captions up to 128 characters can be entered from an external computer connected to the main unit or RS-232C terminal for printout with display on outside of the print frame.

- **RS-232C Interface**
  With RS-232C interface provided, control is possible from an external computer. Also, remote control operation for print can be made by using the supplied wireless/wired remote control unit.

- **Image Operation on Menu Screen**
  Necessary operations such as various functions and adjustments can be made simply by selecting on the menu display.

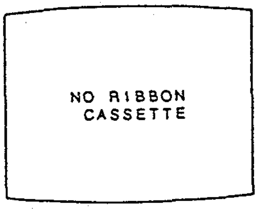
- **Front Access Type**
  Replacement, removal and mounting of a ribbon cassette and paper tray can be carried out on the front panel, and these can be accommodated in a 19-inch standard rack.



PROCESS ERROR

Impossible printout.
Paper is jammed.

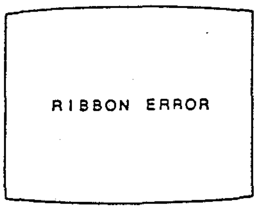
Remove the cover from the top of the printer and remove the jammed paper.



NO RIBBON CASSETTE

Impossible printout.
Ribbon cassette is not inside.

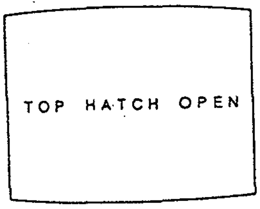
Load a ribbon cassette.



RIBBON ERROR

Ribbon has run out.
Impossible printout.

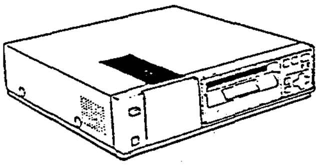
Replace the existing ribbon with a new one.

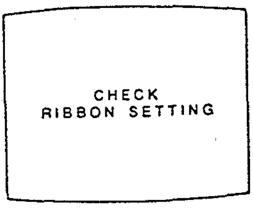


TOP HATCH OPEN

Impossible printout.
The cover on the top of printer is open.

Close the cover completely.

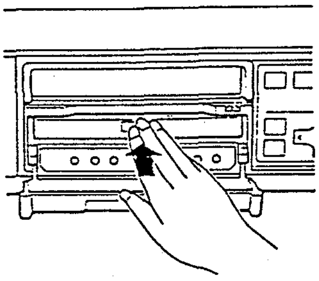


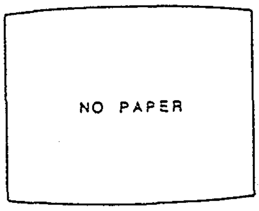


CHECK RIBBON SETTING

Impossible printout.
Ribbon cassette is not correctly inserted.

Insert the cassette fully in and keep on holding it until the print paper is discharged.

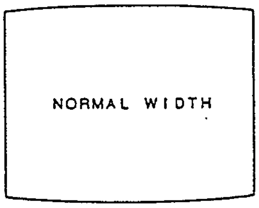




NO PAPER

Impossible printout.
No print paper is inside, or the paper tray is not put in.

Load print papers in the tray and set it in the printer.

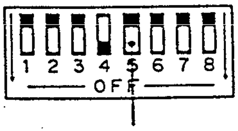


NORMAL WIDTH

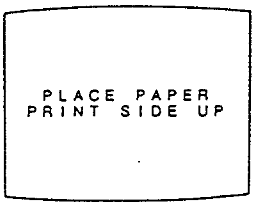
(Appearing for sereral seconds.)

Display is made in the wide mode.

To discontinue the wide mode, turn off the DIP switch.

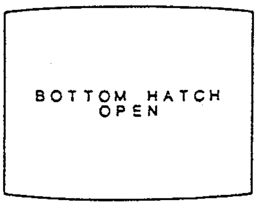


Turn this OFF.



PLACE PAPER
PRINT SIDE UP

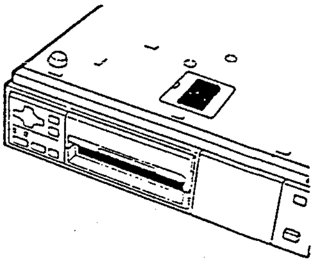
Impossible printout.
Print paper in the tray is reversely loaded, or the combination of print paper and ribbon is not proper.

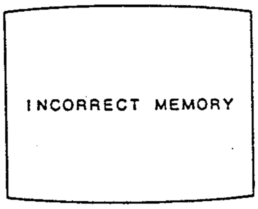


BOTTOM HATCH
OPEN

Impossible printout.
The bottom of the printer is open.

Close the cover completely.



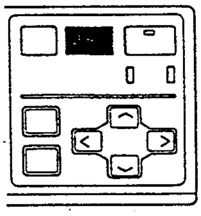


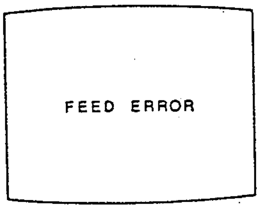
INCORRECT MEMORY

(Displays for a period of seconds.)

Impossible printout.
No image is stored in the memory, or memory selection is in error.

When no image is stored, press MEMORY IN to store images.





FEED ERROR

Impossible printout.
Paper is jammed.

1-2. LOCATION AND FUNCTION OF PARTS AND CONTROLS

Front Panel

❶ **POWER (power source) switch**
When the printer is on, the green lamp lights.

❷ **Ribbon door**
Load or unload the ink ribbon cassette here.

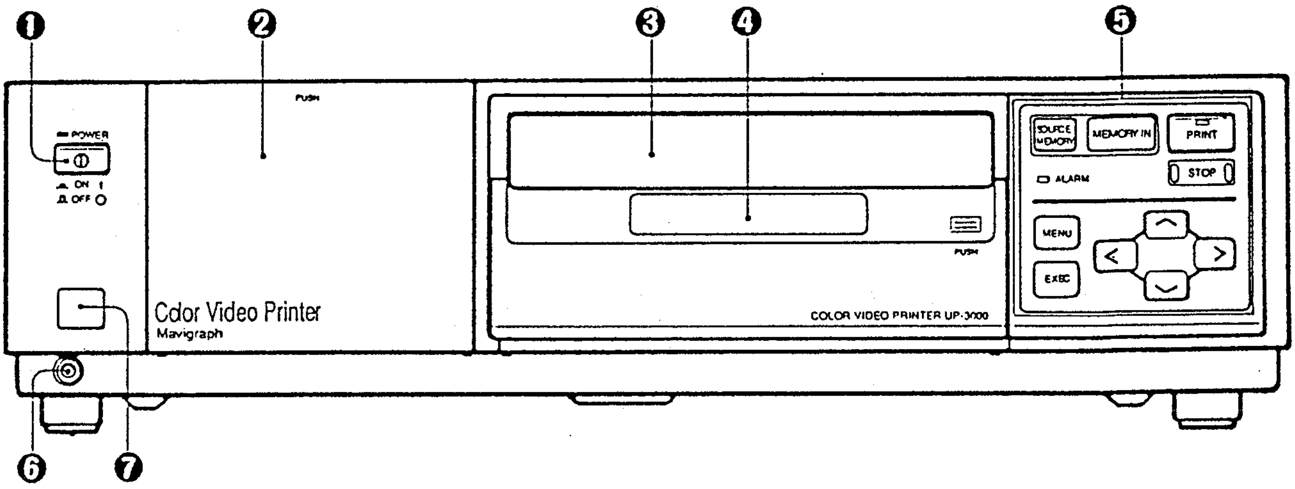
❸ **Paper window**

❹ **Paper door**

❺ **Print operation panel**

❻ **Remote control terminal**
Use this connector when you use the remote control wired.

❼ **Remote sensor**
Detects infrared rays when you use the remote control wireless.


❶
❷
❸
❹
❺
POWER
ON
OFF
PUSH
Color Video Printer
Mavigraph
PUSH
COLOR VIDEO PRINTER UP-3000
SOURCE MEMORY
MEMORY IN
PRINT
ALARM
STOP
MENU
EXEC
❻
❼

Inside of Front Panel

[Adjustment controls]

❶ RGB fine tuning controls

Adjusts separately the R, G, and B elements of the color. The color becomes stronger as you turn the control to the right.

R: Red
G: Green
B: Blue

❷ SHARP (Sharpness) control

Makes the print sharper or softer by defining or blurring the outline of the subject. The print becomes sharper as you turn the control to the right.

❸ BRIGHT (brightness) control

Controls the brightness (luminance) of an image.
It becomes brighter as you turn the control to the right.

❹ PICTURE control

Makes well-balanced and instant control of the color intensity, contrast, and brightness. When you turn the control to the right, the color intensity, contrast, and brightness levels become higher.

❺ COLOR control

Controls the color intensity if the format of video signal is composite or separate Y/C. When you turn the control to the right, the color intensity becomes stronger.

[Operating section]

❼ SOURCE/MEMORY button

Changes the setting for the output signal.

❽ MEMORY IN button

Push to store and image in memory.

❾ PRINT button

Push to make prints.

❿ STOP button

Push to stop the printing midway.

⓫ ALARM lamp

When the print paper is jamming or other error occurs, the red lamp lights.

⓬ MENU SET button

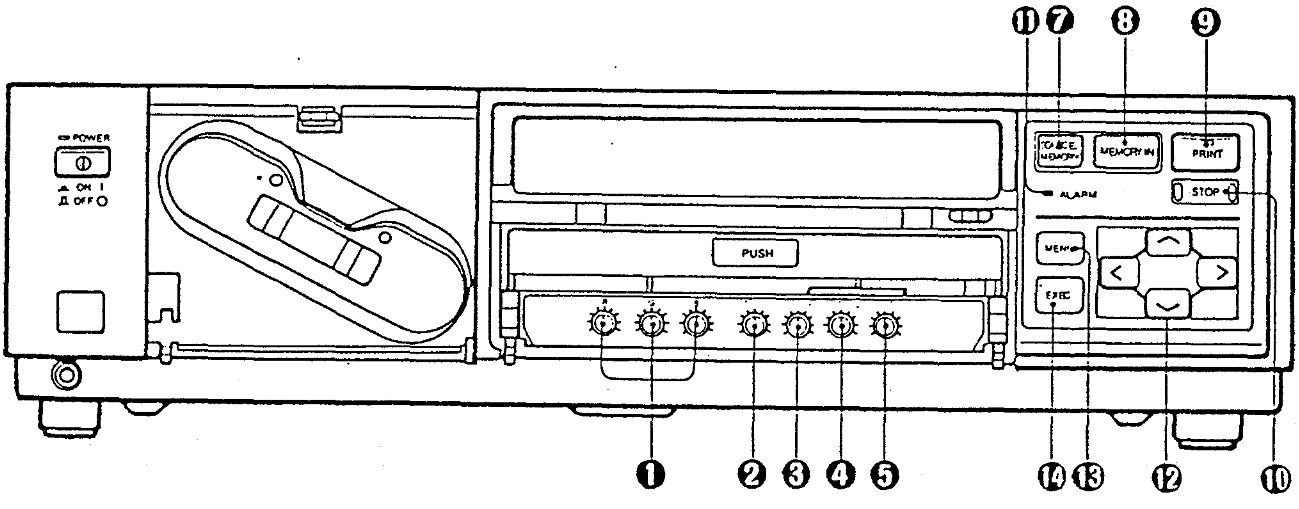
Push to change the various settings.

⓭ MENU button

Turns the menu display ON and OFF.

⓮ EXEC button

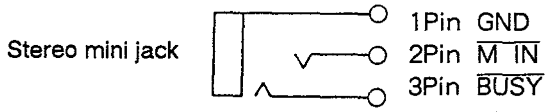
Push to select the menu.



Rear Panel

❶ CONTROL terminal

Connect the foot switch FS-20 (not supplied) here.


Stereo mini jack
1Pin GND
2Pin M IN
3Pin BUSY

When the print terminal (TTL negative logic) is made low for 100 msec. or longer, the print operation is made, and during printout, the busy terminal (TTL negative logic) is forced low level.

❷ RS-232C interface

Connect an interface cable when you operate the printer over a computer.
For details, refer to "COLOR VIDEO PRINTER INTERFACE MANUAL UPM-3000" (not supplied).

❸ DIP switch

- Set 1 to 4 to OFF position.
- Set 5 to OFF position in the normal mode and to ON in the wide mode.
- Set 6 to OFF position.
- 7 to 8 are used for setting the RS-232C baud rate.
  7: OFF/8: OFF=1200
  7: ON/8: OFF=2400
  7: OFF/8: ON=4800 (SFU-110, DIH-2000, etc.)
  7: ON/8: ON=9600

❹ Input Terminal

Connects the video equipment having outputs of composite video, analog RGB, and S video here.

❺ Output terminal

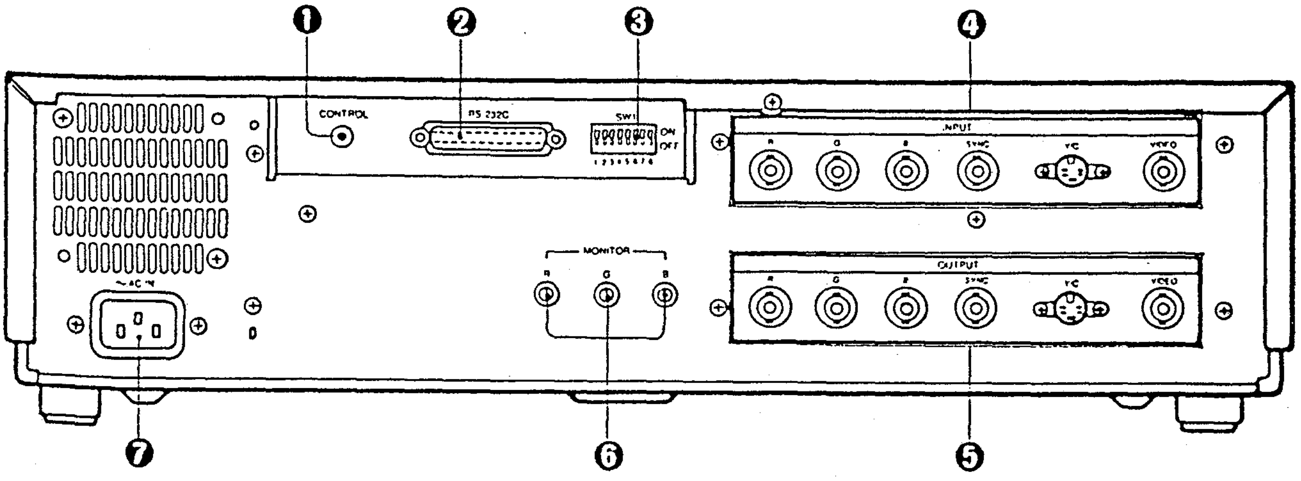
Connects the monitor television set having inputs of composite video, analog RGB, and S video.

❻ Monitor control

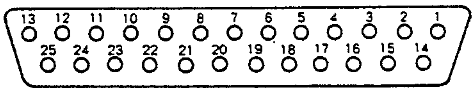
Adjusts the color on the monitor so that identifies with the printing image using R, G and B controls.

❼ AC 200~240V input terminal

Insert the supplied power cord here.

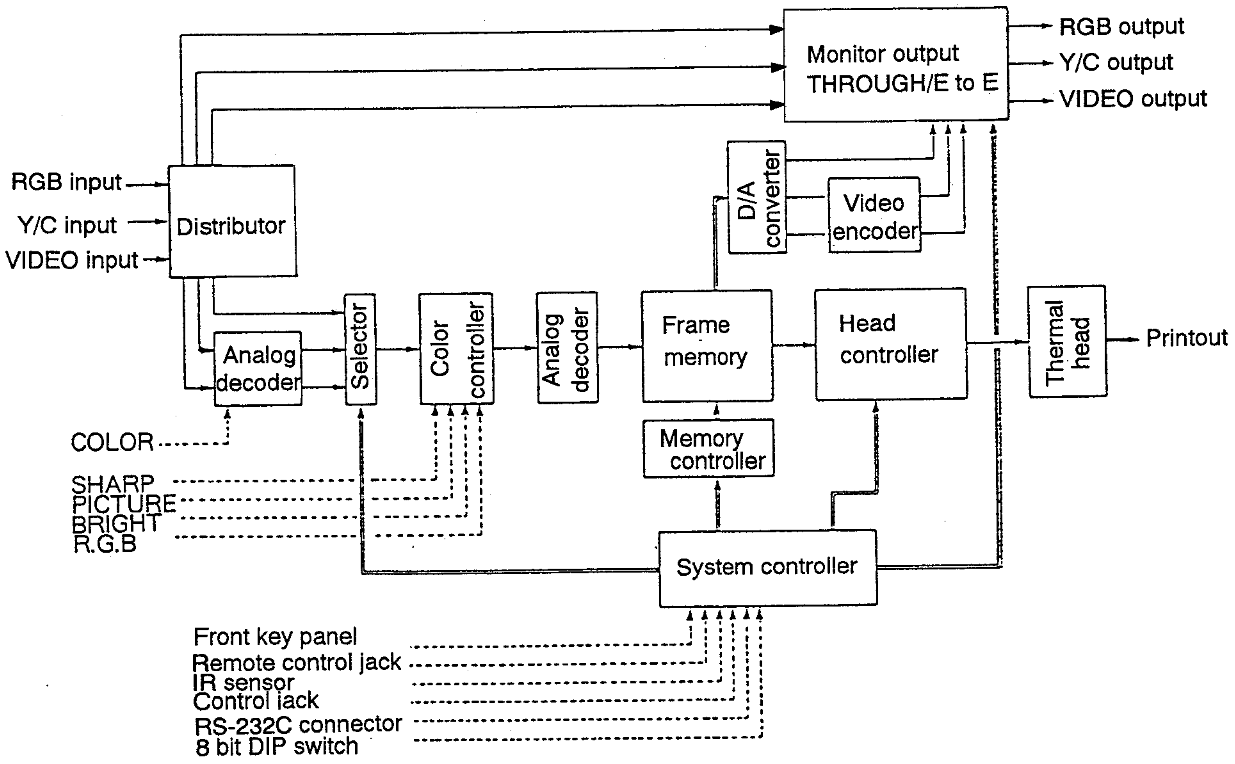

❶
❷
❸
❹
CONTROL
RS 232C
SW1
ON
OFF
INPUT
R
G
B
SYNC
Y/C
VIDEO
MONITOR
R
G
B
OUTPUT
R
G
B
SYNC
Y/C
VIDEO
~AC IN
❼
❻
❺

1-3. PIN ASSIGNMENT OF RS-232C CONNECTOR


13
12
11
10
9
8
7
6
5
4
3
2
1
25
24
23
22
21
20
19
18
17
16
15
14

Pin No.	Signal	Description	Direction
1	FG	Frame Gorund	
2	TxD	Transmit Date	UP-3000 → Host computer
3	RxD	Receive Data	UP-3000 ← Host computer
4	RTS	Request To Send	UP-3000 → Host computer
5	CTS	Clear To Send	UP-3000 ← Host computer
6	DSR	Data Set Ready	UP-3000 ← Host computer
20	DTR	Data Terminal Ready	UP-3000 → Host computer
7	GND	Signal Ground	UP-3000 → Host computer

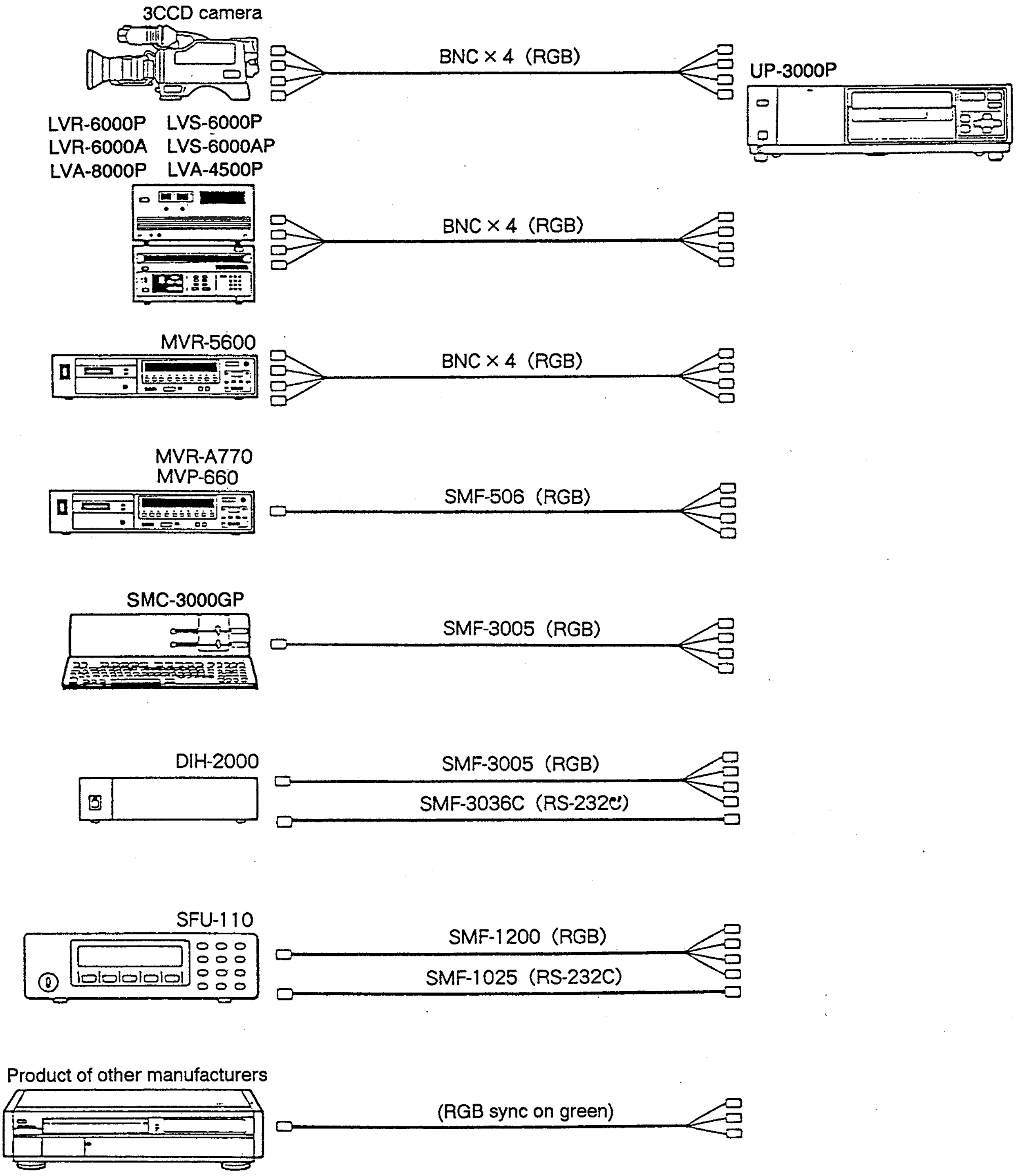
1-4. BLOCK DIAGRAM


Monitor output THROUGH/E to E
RGB output
Y/C output
VIDEO output
RGB input
Y/C input
VIDEO input
Distributor
D/A converter
Video encoder
Analog decoder
Selector
Color controller
Analog decoder
Frame memory
Head controller
Thermal head
Printout
Memory controller
System controller
COLOR
SHARP
PICTURE
BRIGHT
R.G.B
Front key panel
Remote control jack
IR sensor
Control jack
RS-232C connector
8 bit DIP switch

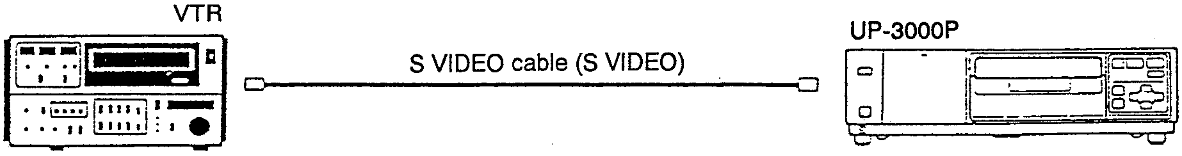
1-5. CONNECTION EXAMPLES

Major input/output equipments and connection cables
The composite video (BNC×1) is excluded.

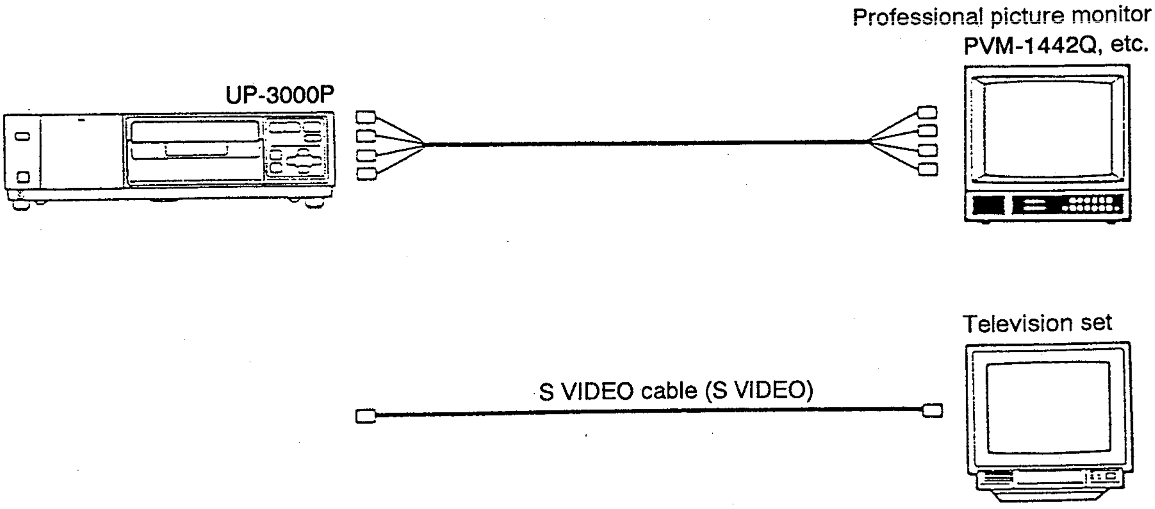
INPUT


3CCD camera
BNC × 4 (RGB)
UP-3000P
LVR-6000P LVS-6000P
LVR-6000A LVS-6000AP
LVA-8000P LVA-4500P
BNC × 4 (RGB)
MVR-5600
BNC × 4 (RGB)
MVR-A770
MVP-660
SMF-506 (RGB)
SMC-3000GP
SMF-3005 (RGB)
DIH-2000
SMF-3005 (RGB)
SMF-3036C (RS-232C)
SFU-110
SMF-1200 (RGB)
SMF-1025 (RS-232C)
Product of other manufacturers
(RGB sync on green)

INPUT


VTR
S VIDEO cable (S VIDEO)
UP-3000P

OUTPUT


Professional picture monitor
PVM-1442Q, etc.
UP-3000P
Television set
S VIDEO cable (S VIDEO)

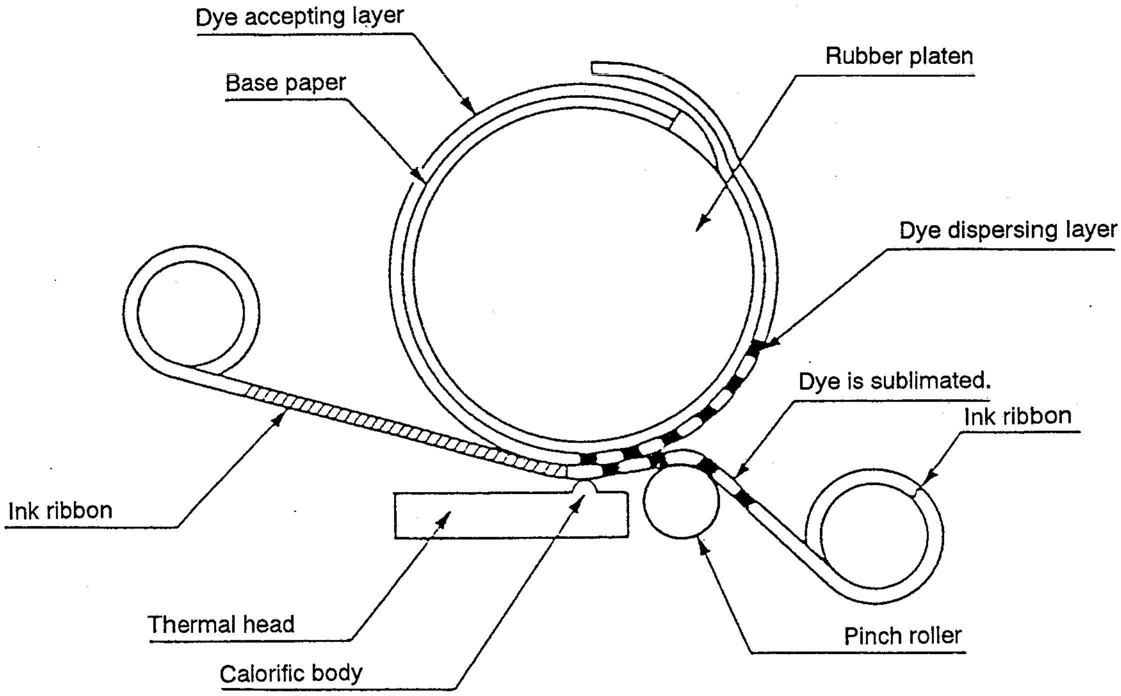
Note: RGB input is automatically discriminated whether the signals is the composite sync or sync on green.
RGB output is the same as the input signal in the loop through mode. Others are the composite sync.
When changes the mode to OUTPUT, use BNC×4 and the monitor that is available for both composite sync and sync on green (GVM-1400, etc.)

1-6. PRINCIPLE

1-6-1. Format of the Color Video Printer

There are various printing formats including color photograph format, ink-jet format, melting thermal imprint format and sublimating thermal imprint format. The last is now the most popular because of picture quality and cost.

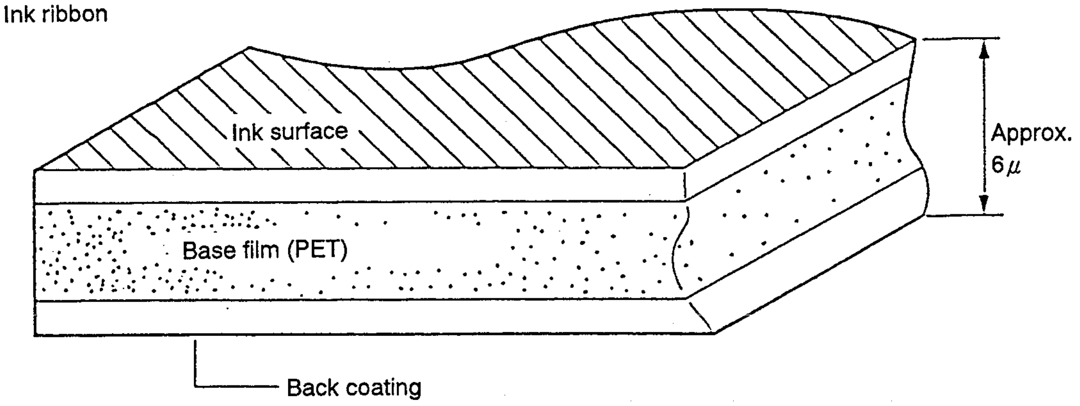
The principle of the sublimating thermal imprint format is as follows. Sublimative dyes (Y:Yellow, M:Magenta, C:Cyan) are processed to ink and applied to the ink ribbon. This ink ribbon and a sheet of printing paper coated by a coloring layer are put between the platen roller and the thermal head with appropriate pressure. Then electrical energy corresponding with the video signals is applied to the thermal head, which generates heat corresponding to the applied electrical energy. This thermal energy sublimates the dyes from the ink ribbon to transfer them to the printing paper.


Dye accepting layer
Base paper
Rubber platen
Dye dispersing layer
Dye is sublimated.
Ink ribbon
Ink ribbon
Thermal head
Calorific body
Pinch roller

Note: 1) Sublimation means a phenomenon where ink in a solid state is directly vaporized by heat.
2) Vaporized dyes enter molecules of the acceptor layer (resin of the polyester series).

1-6-2. Ink Ribbon (Video Ribbon)

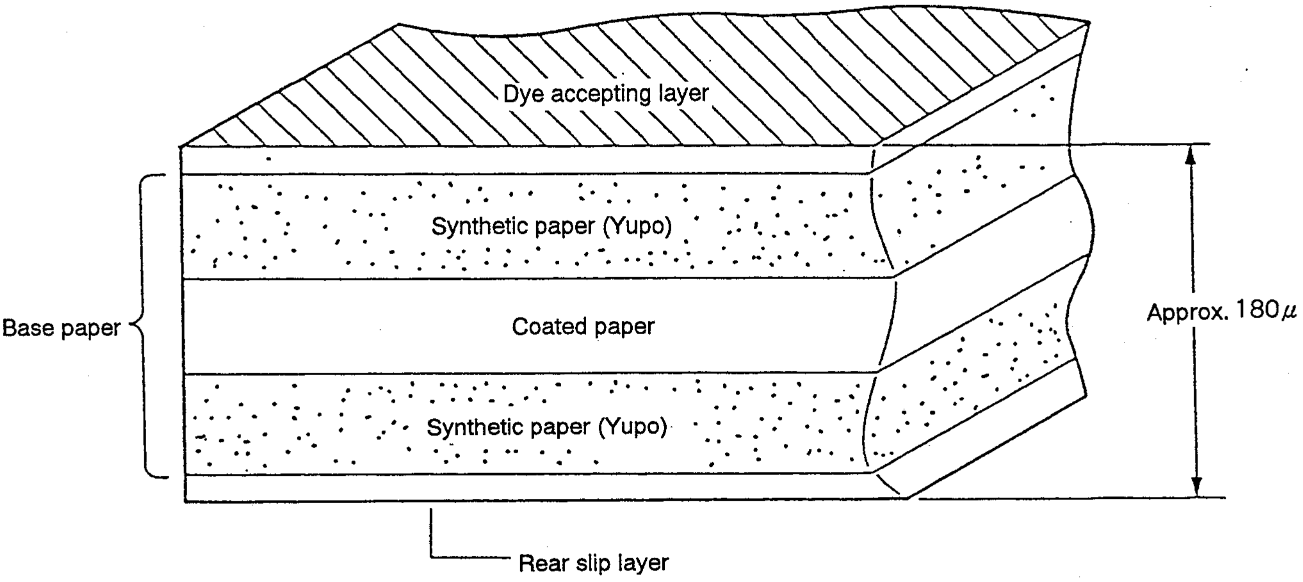
Sublimating disperse dyes are melted in acetate or polyester solution and processed to ink by adding dispersant. The binder is added to this ink before applying it to the base film. In most cases, PET film is used for the base film. The back side of the base film is coated to obtain higher transportability and heat resistance of the ribbon.


Ink ribbon
Ink surface
Base film (PET)
Back coating
Approx. 6μ

1-6-3. Video Graphic Printing Paper

Special paper is used for prints. As sublimative disperse dye provides excellent colors especially on polyester fibers, the surface of ordinary paper is coated with polyester to generate an acceptor layer as shown in the figure below.

Coloring is achieved when sublimated dye molecules disperse in a thermal-plastic polyester structure which is established when polyester is heated. A temperature which is effective for both materials is selected.


Dye accepting layer
Synthetic paper (Yupo)
Coated paper
Synthetic paper (Yupo)
Base paper
Rear slip layer
Approx. 180μ

1-6-4. Principle of Color Reproduction

Color reproduction by the color video printer is performed through subtractive color mixture in the same manner as with paints. Therefore, inks of the three primary colors of coloring materials, yellow (Y), Magenta (M) and Cyan (C), are used in the color video printer. Full colors are reproduced by stacking these inks on prints.

Mixing the three primary colors of light, R, G and B, in the same ratio, generates white (W) light.
Thus the color mixture with lights is called "additive color mixture."

G+B=C
R+B–M
G+R=Y

And, as R+G+B=W;

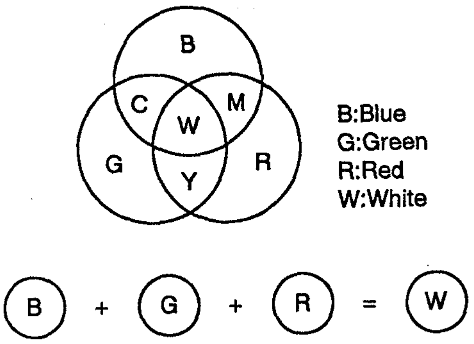
C+R=W→C=W–R
M+G=W→M=W–G
Y+B=W→Y=W–B

This means that the three primary colors of coloring materials can be obtained by deleting one of the primary colors of light, R, G or B, from the white light (W).
Mixing the three primary colors in the same ratio results in;

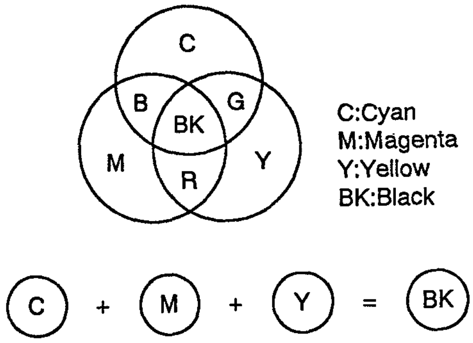
W–R–G–B=0,which means that all the colors are lost, to make black.

Thus, the color mixture with coloring materials is called "subtractive color mixture.".

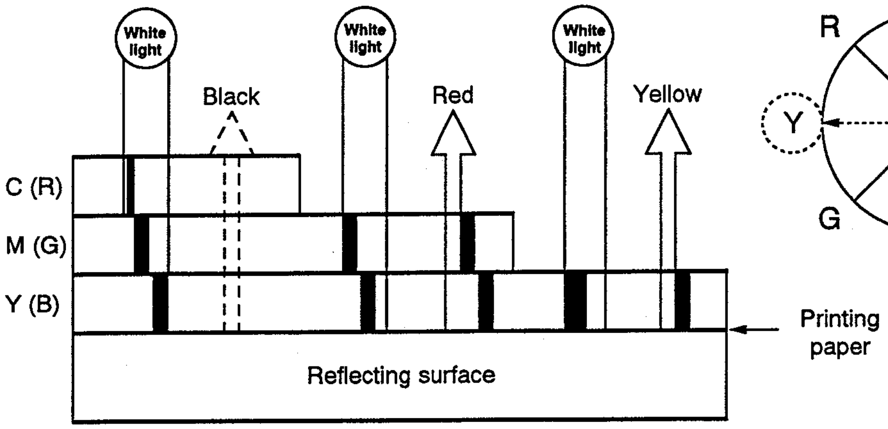
(a) Additive color mixture



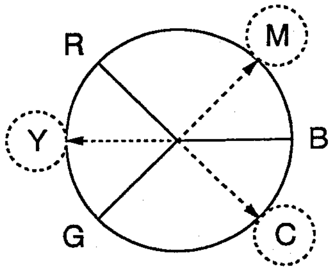
(b) Subtractive color mixture



Example of color reproduction on printing paper



Complementary color diagram

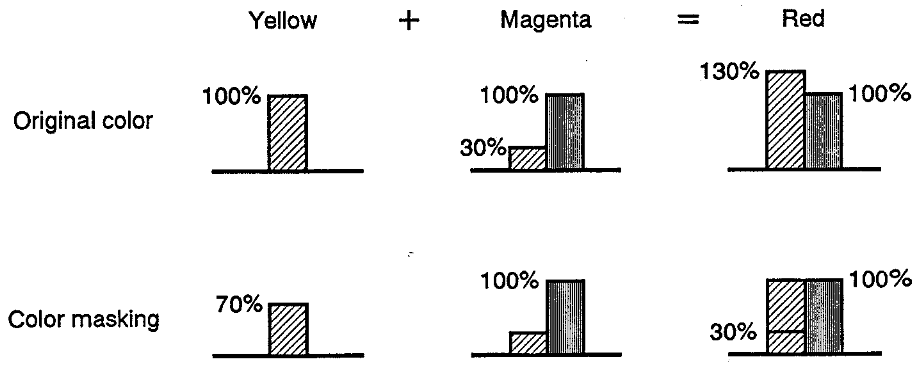


1-6-5. Masking (Color Compensation)

Although Y+M=R logically, no pure red but red with a tinge of orange is obtained by equally mixing Y and R in actual color reproduction. The reason and measures for it are described below.

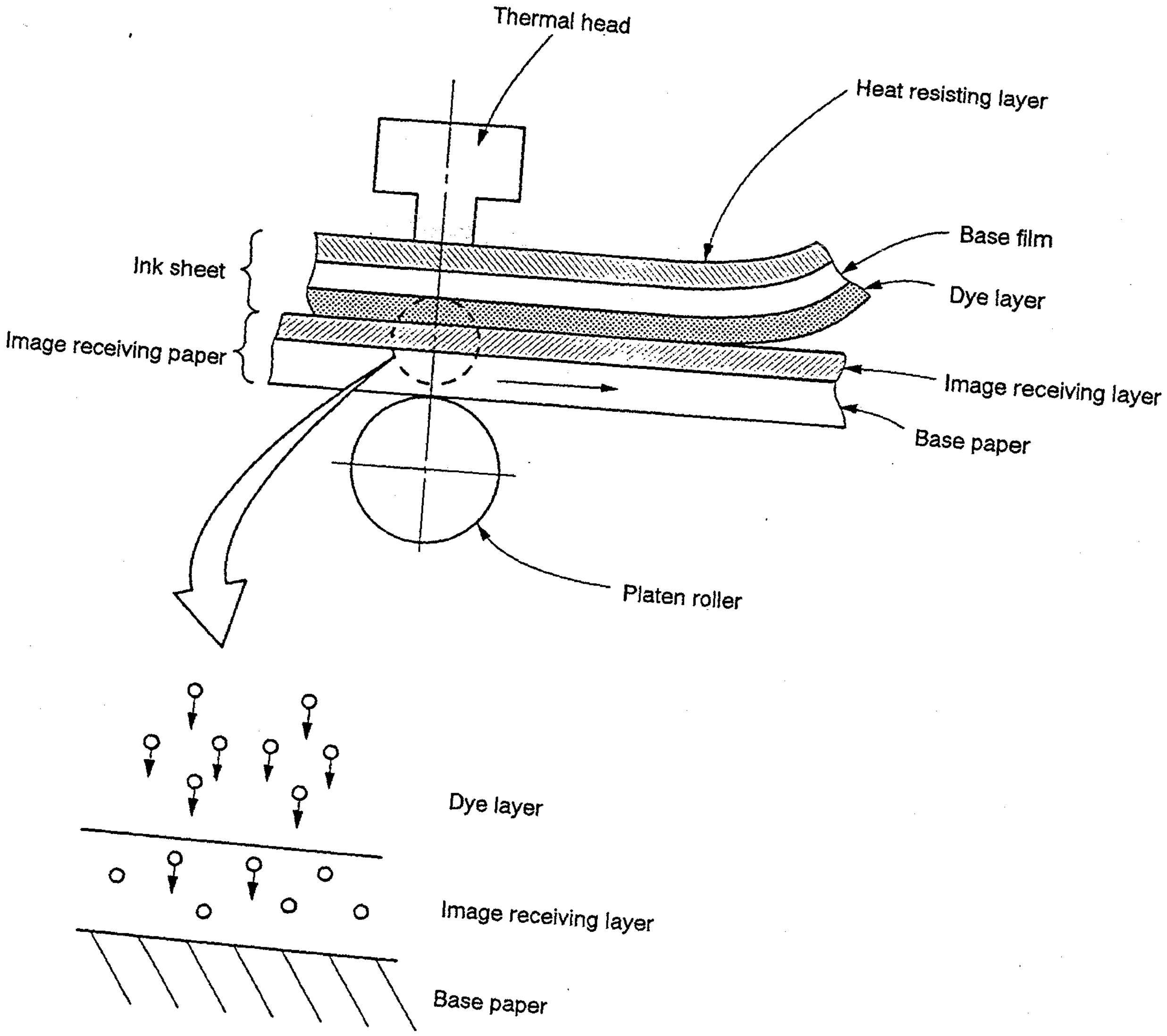
As a matter of fact, there is no dye of pure colors in the world. While Y fortunately has an almost pure color phase close to 100%, M includes Y component of about 30% (which is called and unwanted color component). When Y and M are mixed in the same ratio, the ratio of Y component will total in as much as 130%. Therefore, the calorific value of the head is decreased when mixing colors to reproduce red so that Y is transferred by only 70%. Similarly, C contains some unwanted components. When mixing three colors, color components existing in the three colors must be calculated to generate a necessary color.

Thus, the color video printer performs color compensation according to fundamental data on mixed colors to obtain natural color reproduction.



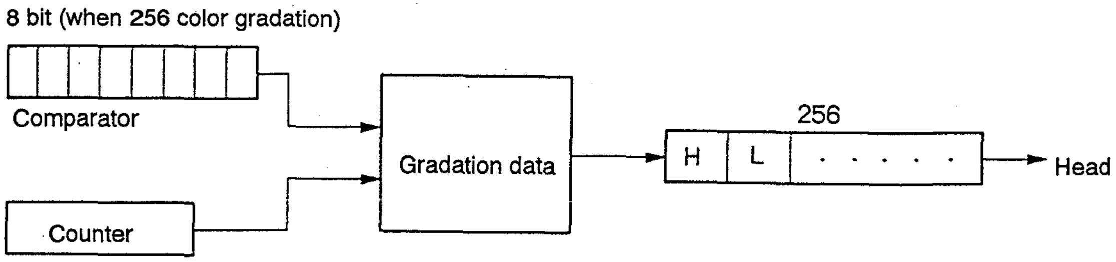
1-7. Transfer Mechanism of Sublimating Thermal Transfer Printer

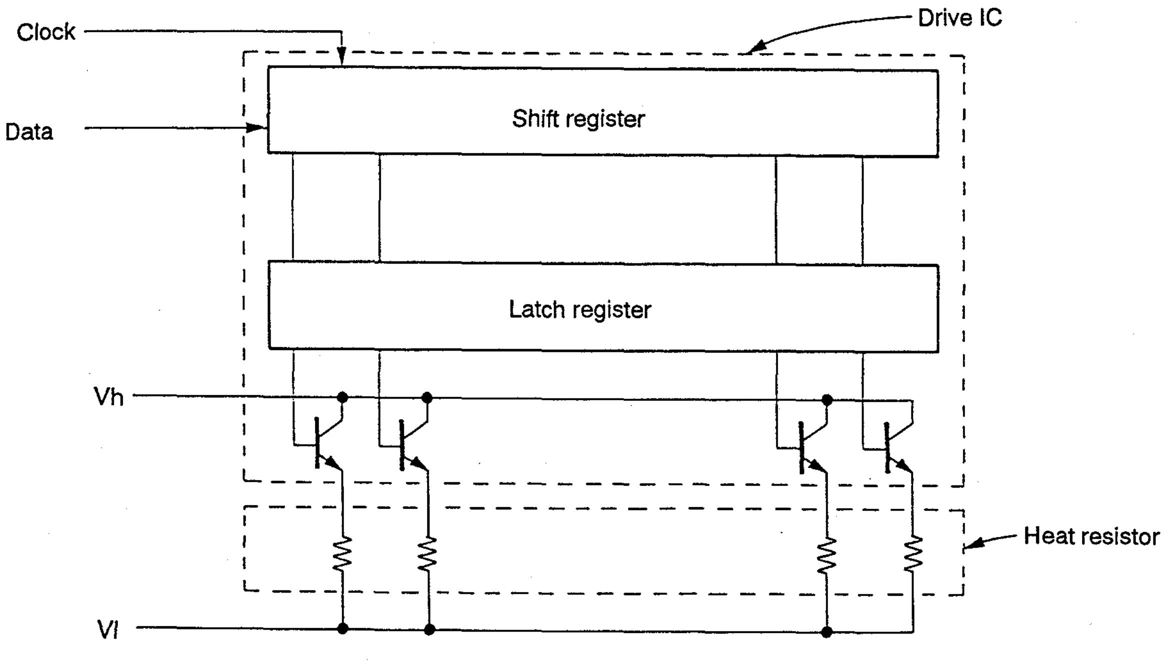
Transfer mechanism


Thermal head
Heat resisting layer
Base film
Dye layer
Ink sheet
Image receiving paper
Image receiving layer
Base paper
Platen roller
Dye layer
Image receiving layer
Base paper

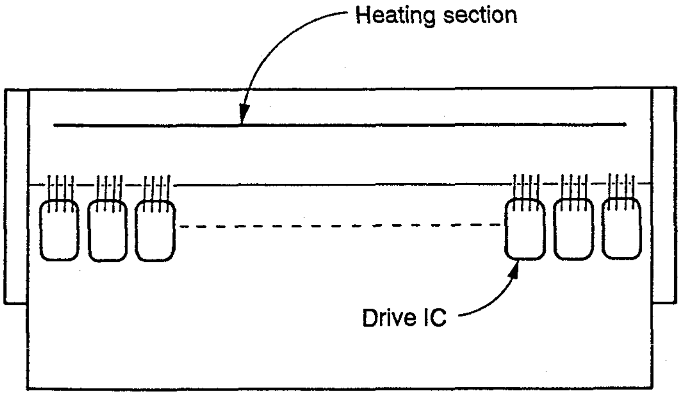
1-8. Thermal Head Drive

Relations between the thermal head and the drive data

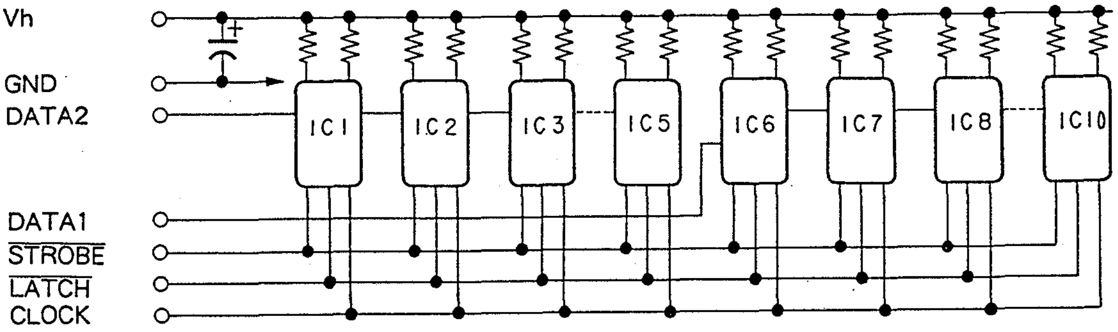

8 bit (when 256 color gradation)
Comparator
Counter
Gradation data
256
H
L
Head


Clock
Data
Drive IC
Shift register
Latch register
Vh
Heat resistor
Vl

1-9. Internal Circuit of the Head


Heating section
Drive IC

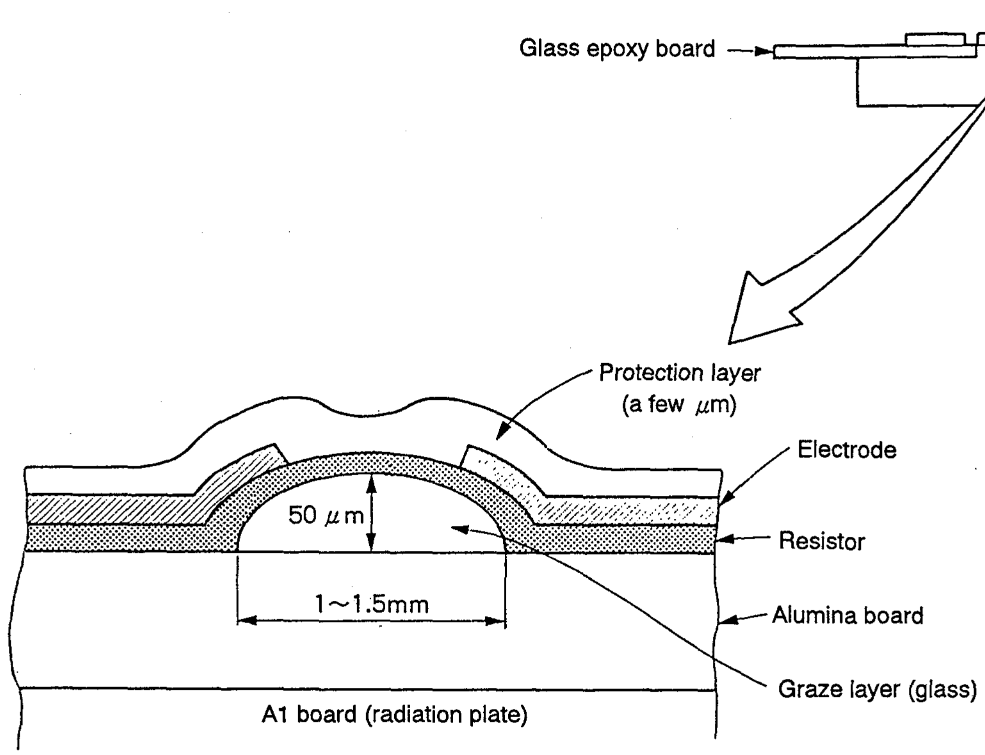
Block diagram

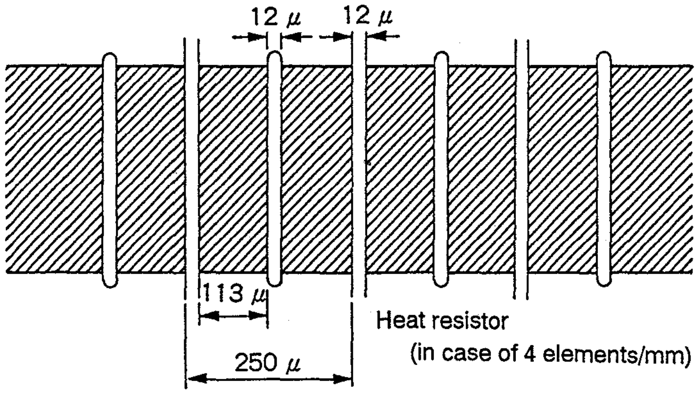

Vh
GND
DATA2
DATA1
STROBE
LATCH
CLOCK
IC1
IC2
IC3
IC5
IC6
IC7
IC8
IC10

* 64 heating elements are assigned for one IC.
(In case of 640 elements)

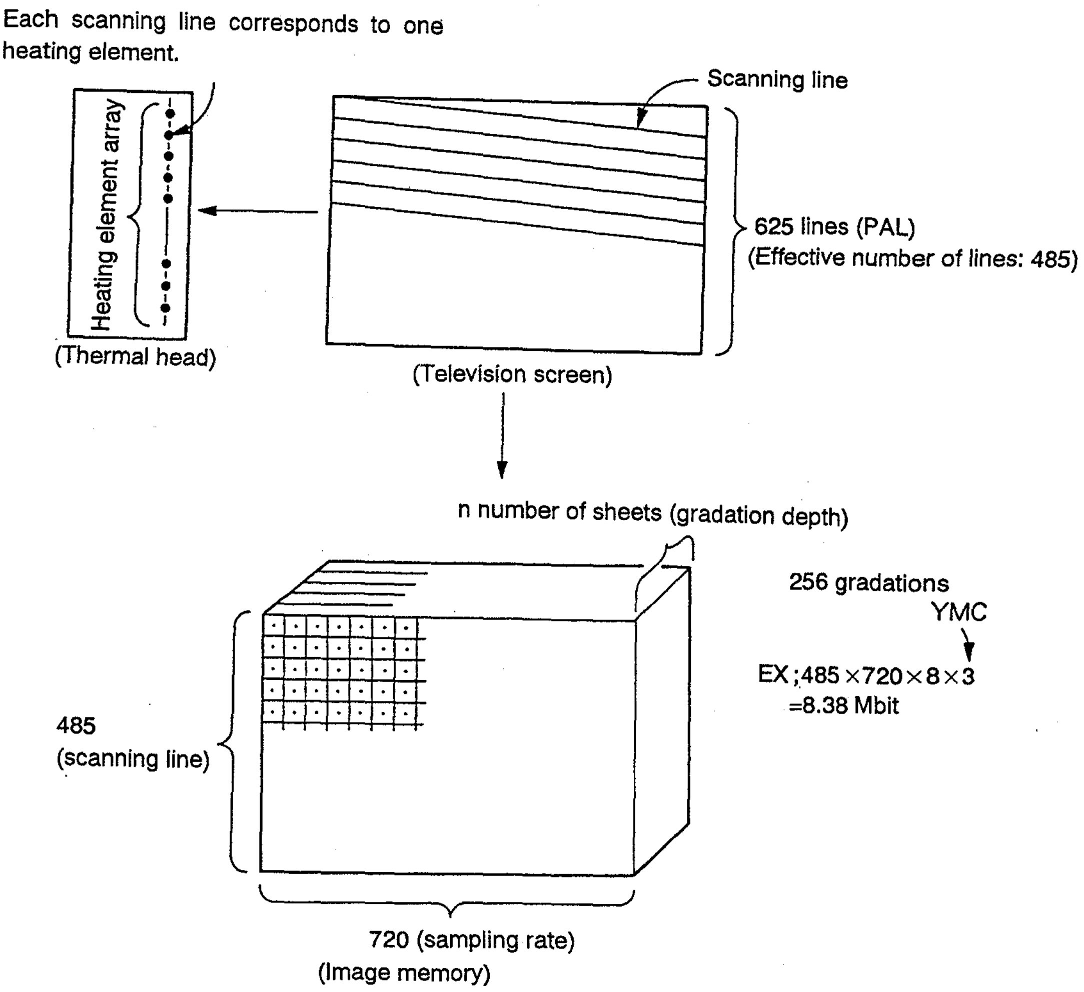
1-10. Thermal Head Structure

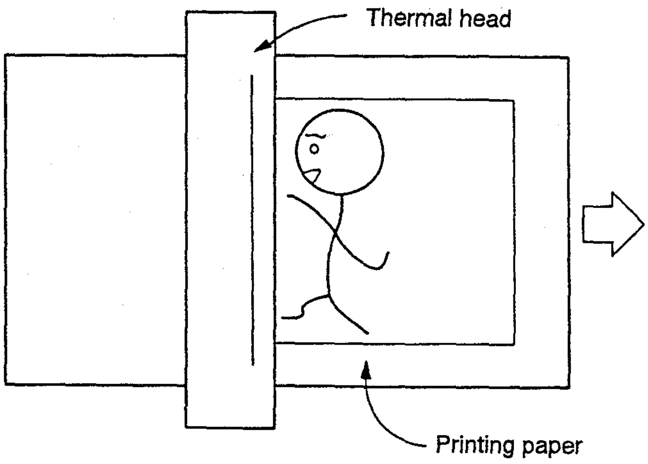
Structure


Glass epoxy board
Protection layer
(a few µm)
Electrode
Resistor
Alumina board
Graze layer (glass)
50 µm
1~1.5mm
A1 board (radiation plate)

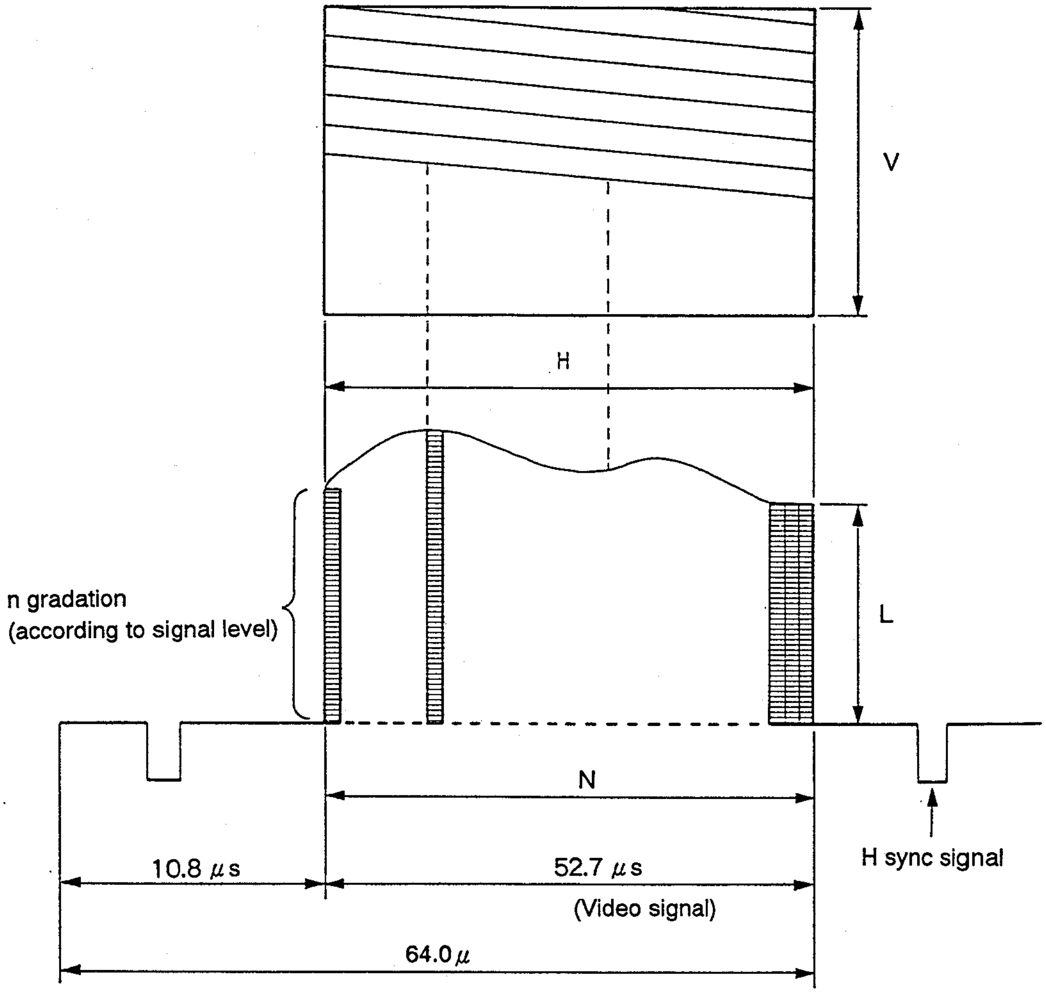

12 µ
12 µ
113 µ
250 µ
Heat resistor
(in case of 4 elements/mm)

1-11. Relations between Video Signals and Prints


Each scanning line corresponds to one heating element.
Heating element array
(Thermal head)
Scanning line
625 lines (PAL)
(Effective number of lines: 485)
(Television screen)
n number of sheets (gradation depth)
256 gradations
YMC
EX ;485 × 720 × 8 × 3
=8.38 Mbit
485
(scanning line)
720 (sampling rate)
(Image memory)


Thermal head
Printing paper

Video signal sampling (digitalization)


V
H
n gradation
(according to signal level)
L
N
10.8 μs
52.7 μs
(Video signal)
64.0μ
H sync signal

$$\frac{1}{625 \times 25} = 64.0\mu s$$

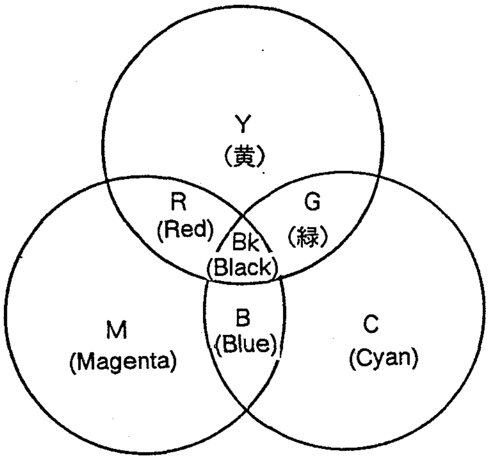
<Digitalization of TV signal>

N (sampling rate); Determined from the frequency at which the TV signal bandwidth can be fully reproduced.
fs (sampling frequency) ≧ 2 f max. (maximum frequency of video signal)
EX; When sampling is made at fs=14.3 MHz, N=755.

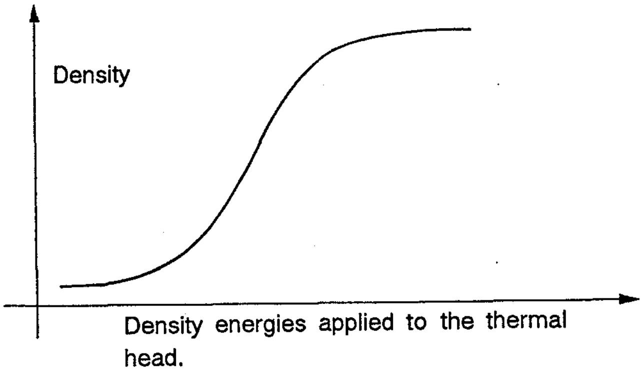
L (signal level); Maximum 0.7V video signal level is cut in required quantities of gradations.
EX; If there are 256 gradations, gradations should be cut into quantity of 256 maximum.

Comparison of thermal transfer formats

Format	Recording material		Gradation	Feature
	Image receiving paper	Coloring material		
Sublimating thermal transfer	Coat paper or synthetic paper	Dye	Analog	High picture quality
Melting thermal transfer	Plain paper	Pigment	Two values (0, 1)	High speed
Sensitized thermal transfer	Plain paper	Pigment	Analog	High speed



Three primary colors of dye



Energies and coloring density

SECTION 2
CIRCUIT OPERATION DESCRIPTION

2-1. GENERAL

UP-3000P is a color video printer for signal of the CCIR system (625 lines/50 fields). Input and output correspond to the three types of signals, ie., video, Y/C and R/G/B/sync signals. As output mode (monitor mode), the following three can be selected.

THROUGH mode: Input signal are directly output in real-time.
E to E mode: Signal to be fetched to the memory are output.
MEMORY mode: Signal to be fetched to the memory are output.

2-2. CIRCUIT CONFIGURATION

UP-3000P consists of three sections indicated below:

1) Analog system video processing section (IF-13 board and VA-5 board)
   This section performs input and output operations (IF-13 board) with external equipment, and input and output operations with the digital video processing section, and offset processing (VA-5 board).
2) Digital system video processing section (MHC-4 board)
   This section digitizes signal received from the analog system, stores them, and converts them into signals for printing. This also controls the thermal head.
3) System control section (SY-6 board and DUS-3 board)
   This section controls the analog and digital video processing sections, sensors and motors.

2-2-1. Analog System Video Processing Section

The analog system basically consists of three blocks given below.

1. **Interface block (IF-13 board)**
   This section makes connecting operation with external equipment.
   Input and output of various video signals are all made via the interface block.
   Also, when the unit is set in the THROUGH mode, it performs the function of directly sending the entered signal via the video amplifier.
2. **Input processing block (VA-5 board)**
   This section makes analog processing to fetch the input signal to the memory.
   Various video signals passing through the interface block are sent into the input processing block for selection of a desired video signal by the select signal from the SY-6 board and then converted into RGB signal.
   Next, the process is done by using controls such as the picture controls “R”, “G”, “B”, “SHARP”, “BRIGHT” and “PICTURE” on the front panel.
   Signals processed by using controls such as “HUE” and “COLOR” are supplied only when the input signal is “video” or “Y/C”.
   Also, the sync signal is separated from the selected input signal, then stabilized by the AFC loop, and sent to the digital video processing section (MHC-4 board) along with the converted RGB signal.

3. Output processing block (VA-5 board)

This block applies the signal processed by the monitor picture control "R", "G" and "B" on the rear panel to the RGB signal sent from the digital system and superimposes the character signal complied with character display command sent from the SY-6 board over that signal. It further converts the signals into three types of signals, namely, the R/G/B/sync, NTSC conforming composite video signal and Y/C signal for supply to the interface block.

The subcarrier frequency of the composite video signal and Y/C signal to be output here are not locked with the sync frequency.

The flow of the signal of the analog system is shown in Fig. 1.

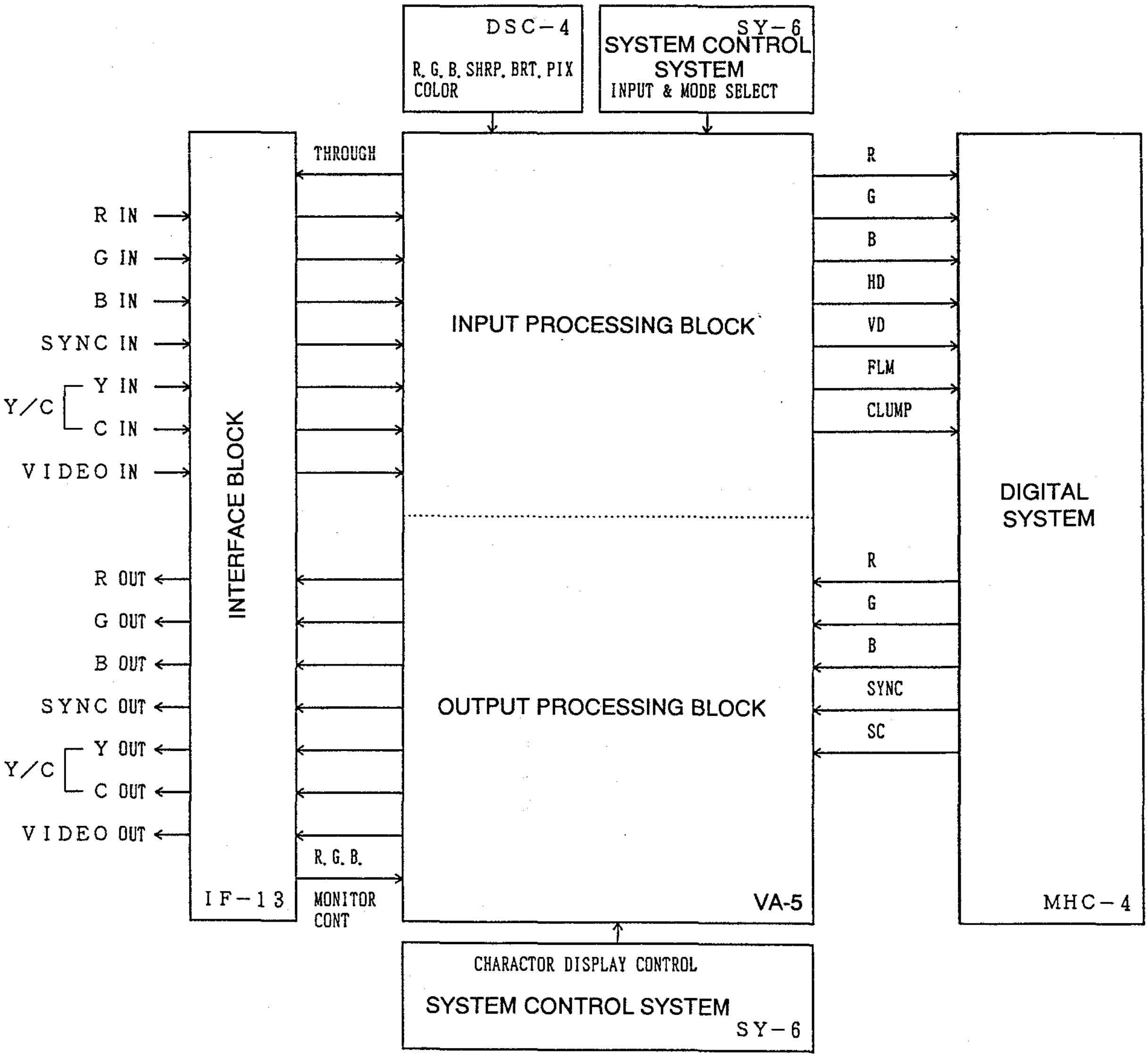

DSC−4
R. G. B. SHRP. BRT. PIX COLOR
SY−6
SYSTEM CONTROL SYSTEM
INPUT & MODE SELECT
THROUGH
R IN
G IN
B IN
SYNC IN
Y IN
Y/C
C IN
VIDEO IN
INTERFACE BLOCK
INPUT PROCESSING BLOCK
R
G
B
HD
VD
FLM
CLUMP
DIGITAL SYSTEM
R OUT
G OUT
B OUT
SYNC OUT
Y OUT
Y/C
C OUT
VIDEO OUT
OUTPUT PROCESSING BLOCK
R
G
B
SYNC
SC
R. G. B.
IF−13
MONITOR CONT
VA-5
MHC−4
CHARACTOR DISPLAY CONTROL
SYSTEM CONTROL SYSTEM
SY−6

Fig. 1

2-3. IF-13 BOARD

This board is an interface between external equipment and analog video processing section.

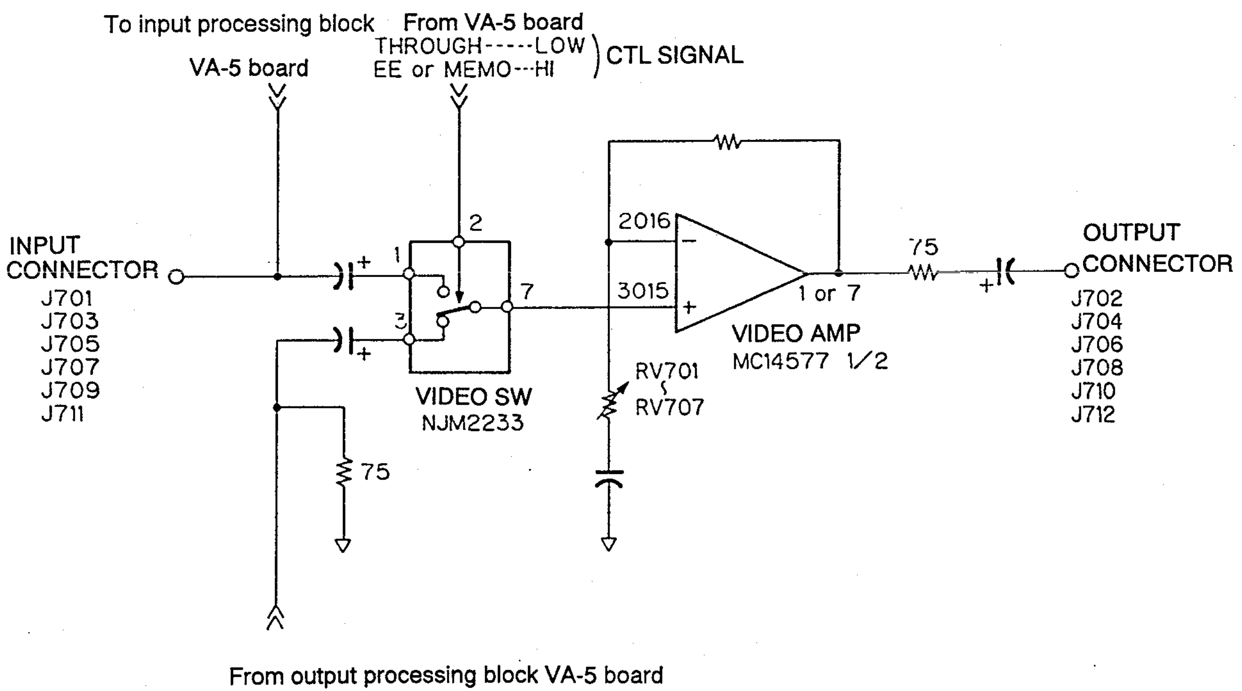


Fig. 2

Various video signals (R/G/B/sync, Y/C, and composite) fed to the IF-13 board are only connected to Pin No. ① of the input terminal (High impedance) of the video switch ICs (IC701, IC702, IC704, IC705, IC707, IC708, and IC710), and sent directly to the input processing block of VA-5 board without being electrically processed particularly. Also, a signal sent from the output processing block of VA-5 board is connected to Pin No. ③, which is the input terminal of the above video switch IC, and terminated once at 75Ω . This line allows signal transmission at 75Ω to avoid adverse effects on isolation and frequency response.

The video switch IC selects the input signal of Pin No. ① when the CTL signal from the VA-5 board is low level (THROUGH mode) and selects the input signal of Pin No. ③ when it is high level (EE or MEMORY mode), and outputs either of them from Pin No. ⑦.

The signal selected by the video switch IC is amplified by the video amplifier ICs (IC703, IC706 and IC709) and passed

through a 75Ω resistor and a DC cut capacitor to become an output signal.

RV701 to RV707, which cause the output level of the video amplifier to be varied, are used to make adjustment in the THROUGH mode so that the input signal level and the output signal level become equal to each other.

2-4. VA-5 BOARD (1) – INPUT PROCESSING BLOCK

This board performs the video processing of the analog system. It makes input processing of various video signals received via IF-13 board and sends them to the digital system. It also converts signals from the digital system into various video signals and outputs them.

2-4-1. R/G/B/sync Input Circuit (Q1 to Q8)

The R/G/B/sync input signals passed through the IF-13 board are terminated here at 75Ω and then buffered by the emitter grounded amplifier (Q1 to Q8), after which these are fed to Pin Nos. ⑤, ⑥ and ⑦ of IC11, respectively. RV1 (R-E LEV) and RV3 (B-E LEV) are adopted to control the balance among R, G and B at the time of R/G/B/sync input, including the deviations of the digital system. G CH is a fixed gain. The gain at each section of the input processing block is adjusted based on the G CH.

2-4-2. R/G/B/sync Sync Discriminator Circuit (Sync on G) (Q9, Q11, IC4 and IC5)

After being buffered, the sync input signal is fed to Pin No. ① of IC4. It is clamped by C20 and Q9 at the same time and pulse converted to trigger IC5 (monostable multivibrator).

IC5 remains retriggered as long as there is a sync input signal, and Pin No. ⑦ (Q) is fixed at low level. When there is no sync input, IC5 is not triggered, and Pin No. ⑦ (Q) is brought to high level. The output (Pin No. ⑦) of IC4 becomes the input (sync) of Pin No. ① when Pin No. ⑦ of IC5 is low level, but it becomes a G input (sync on G) signal of Pin No. ③ when Pin No. ⑦ of IC5 is high level.

2-4-3. Y/C Input Circuit (Q12 to Q15)

The Y/C input signal passed through the IF-13 board is terminated here at 75Ω and buffered by the emitter grounded amplifier (Q12 to Q15), after that the Y signal is fed to Pin No. ① of IC1 and chroma signal to Pin No. ① of IC2.

2-4-4. Video Input Circuit (Q950, Q949 and FL1)

The video input signal passed through the IF-13 board is terminated here at 75Ω , amplified to 6 dB by Q950, Q949. Here, the signal is separated into the Y signal and chroma signal. The Y signal is fed to Pin No. ③ of IC1 and chroma signal to Pin No. ③ of IC2.

2-4-5. Y/C Video Selector Circuit (IC1 and IC2)

The Y/C input signal is fed to Pin No. ① of IC1 (Y signal) and IC2 (chroma signal), and the video input signal Y/C separated by FL1 (comb filter block) to Pin No. ③ of these ICs.

The two ICs select either Y/C (low) or video (high) depending upon the level of Pin No. ② of them (determined by INPUT SELECT setting) and output the signal from Pin No. ⑦.

The chroma signal selected by IC2 is amplified to 6 dB by IC8 and fed to Pin No. ㊻ of IC10.

2-4-6. RGB - Y/C Video Selector Circuit (IC7)

Either the sync or sync on G signal from the R/G/B/sync input section is fed to Pin No. ① of IC7, and the Y signal component of either Y/C input or video input selected by IC1 is fed to Pin No. ③.

IC7 selects either RGB(low) or Y/C (or video) (high) depending upon the level of Pin No. ② (determined by INPUT SELECT setting) and outputs it from Pin No. ⑦.

This output signal is fed to Pin No. ⑬ of IC6 (AGC and sync SEP IC).

2-4-7. AGC and Sync SEP Circuit (IC6)

The Y signal or sync signal selected by IC7 is fed to Pin No. ⑬ of IC6. IC6 has the AGC (automatic gain control) and sync SEP (sync separation) functions. The AGC is combination type combining sync-AGC with PEAK-AGC, and these are adjusted by RV5 and RV7, respectively.

The output of the AGC amplifier is sent from Pin No. ⑮, passed through the buffer and chroma track, and then fed to Pin No. ④. The composite sync signal separated from Pin No. ④ input signal is output from Pin No. ⑦ and sent to the sync processing system.

2-4-8. Sync Discriminator Circuit (IC14 and IC32)

The composite sync signal from IC6 is fed to Pin No. ② of IC14. Also, an internal sync signal is fed to Pin No. ④ from the digital system.

IC14 triggers the monostable multivibrator with the signal fed to Pin No. ② and integrates the output at the Cycle connected to Pin No. ⑦ to create DC voltage (TP68 DET-V). Next, this DC voltage is received by the window comparator having hysteresis to discriminate whether the signal fed to Pin No. ② is normal or not. If this signal is found normal, the signal fed to Pin No. ② is output from Pin No. ③. But if this signal is not normal or if there is no signal (no signal is connected to the input terminal selected by INPUT SELECTION), the internal sync signal fed to Pin No. ④ is output.

The simplified block diagram of the sync processing system and the operation status table are given in Fig. 3.

Mode	THRU/EE		MEMORY	
Input signal (sync signal from outside)	Present	Absent	Present	Absent
IC14 internal switch	OFF	ON	OFF	ON
IC32 switch	OFF	OFF	ON	ON

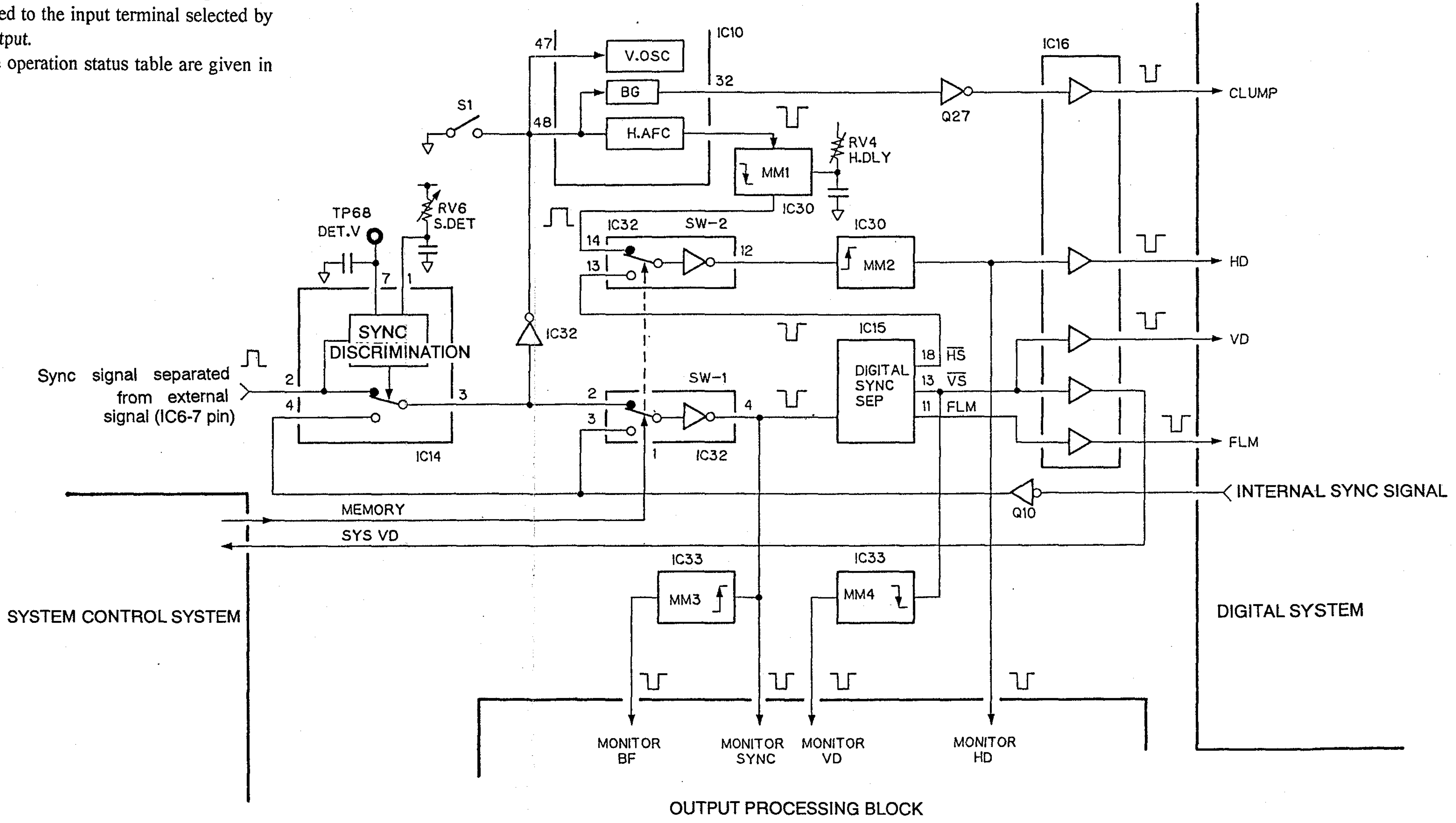

IC10
V.OSC
BG
H.AFC
47
32
48
S1
IC16
CLUMP
Q27
RV4
H.DLY
MM1
IC30
IC30
MM2
TP68
DET.V
RV6
S.DET
IC32
SW-2
14
13
12
HD
7
1
SYNC
DISCRIMINATION
IC32
IC15
DIGITAL
SYNC
SEP
18 HS
13 VS
11 FLM
VD
Sync signal separated from external signal (IC6-7 pin)
2
4
3
SW-1
2
3
4
1
IC32
IC14
FLM
INTERNAL SYNC SIGNAL
Q10
MEMORY
SYS VD
IC33
MM3
IC33
MM4
SYSTEM CONTROL SYSTEM
DIGITAL SYSTEM
MONITOR BF
MONITOR SYNC
MONITOR VD
MONITOR HD
OUTPUT PROCESSING BLOCK

Fig. 3

2-4-9. Digital Sync Separator Circuit (IC15)

One of the output signal of IC14 is fed to AFC system of IC10, and the other is passed through SW-1(IC32) and fed to IC15. IC15 is a gate array for sync separation. It separates a HS (H sync:negative logic) (Pin No. ⑱), VS (V sync:negative logic) (Pin No. ⑬), and FLM (field discriminating signal, EVEN:H, ODD:L) (Pin No. ⑪) from the composite sync signal, then outputs them.

2-4-10. Operation of Sync Signal Route

To begin with, a signal from outside is available as operation status, and setting is made in the EE mode. This signal (Pin No. ㉜ of IC10) is inverted by Q27 and output to the digital system as a clamp signal. Also, the H sync signal subjected to AFC by IC10 is expanded in pulse width by MMI (IC5 and IC9), passed through SW-2 (IC4 and IC7) (SW-2), and fed to MM2 (IC5 and IC9). MM2 creates about 5 μsec pulses from the rear edge of the input pulse and outputs it to the digital system as a HD signal and to the output processing block as a monitor HD signal. MM2 is adjusted by RV4 so that the HD signal is delayed by 1H from
the input signal from outside. Each output separated by IC15 is first outputs HS of Pin No. ⑱ to SW-2 (Pin No. ⑬ of IC32) and VS of Pin No. ⑬ and FLM of Pin No. ⑪ to the digital system as the VD signal and an FLM signal, respectively. The VS (Pin No. ⑬) is further output to the system control system as SYS VD signal, and then waveform shaped by MM4 (IC30) for output to the output processing block as monitor VD signal.
As MONITOR sync signal, the output (Pin No. ④ from SW-1 of IC32 is output to the processing block. A pulse of about 2 μsec is also created from the rear edge of the same signal by MM3(IC33), and as a monitor BF (burst flag) signal, this pulse is output to the output processing block at the same time.

The AFC of IC10 is designed to be operated by the signal fed irrespectively of the setting mode when there is a signal from outside. This is done to facilitate the image fetching in the MEMORY mode. In other words, when fetching an video image into the memory during the MEMORY mode of operation, the unit is internally set in the EE mode once. When a signal to AFC is switched, several seconds are required to respond to it. Therefore, AFC is designed to avoid the delay in fetching the video image. When there is no signal from outside, the sync processing system operates on the internal sync signal by the function of IC14.
Furthermore, S1 provided before IC10 is a switch for turning on in adjusting the free-running of the AFC and cutting off the sync signal from outside.

2-4-11. Y/C Decoder Section (Outline of IC10)

IC10 (CXA1213S) decodes the Y/C signal to RGB signal at the time of AFC or video or Y/C input. Also, the “COLOR” processing of the user control is carried out in this section.

2-4-12. IC10 Sync System Circuit

Pin No. ⑭ input of IC10 becomes a trigger signal of Vosc and Pin No. ㉛ input becomes a comparison reference signal of AFC. The free-running frequency of Vosc is determined by ceramic resonator (X998). The output of Vosc is sent as VD from Pin No. ⑱ and fed to Pin No. ⑤ of IC9 to trigger the monostable multivibrator. Here, a pulse, of which width is locked at 560 μsec, is output from Pin No. ⑥ of IC9 and fed to IC11. The free-running frequency of Hosc is also determined by ceramic resonator (X998).

The output of Hosc is sent from Pin No. ㉗ as HD and fed to Pin No. ⑫ of IC9 and Pin No. ④ of IC 30 to trigger the monostable multivibrator. Here, the pulse, of which width is locked at 9, is output from Pin No. ⑩ of IC9, and is returned to Pin No. ㉖ of IC10.

In IC10, the phase of Pin No. ㉛ is compared with the input of Pin No. ㉖ to allow the error voltage caused by the phase difference to be passed through the internal lag-lead filter (characteristics are determined by C and R connected to Pin No. ㉚) for attenuating the medium- and high-range components, thereby controlling Hosc.

Also, the output of Pin No. ⑥ of IC30 is sent to the sync processing system.

2-4-13. IC10 Y/Chroma System Circuit

The Y signal (1.0 Vp-p) fed to Pin No. ㊻ of IC10 is mixed with the color difference signal via the delay line, sharpness, picture, hook-up, clamp and brightness circuit, and blanking circuits, after that it becomes the RGB output.

On the other hand, the chroma signal (burst=300 mVp-p) fed to Pin No. ① is passed through circuits such as TOT, chroma amplifier, ACC, APC, color control, picture control, and killer detector circuit, after that the VCO oscillation output locked to the burst is detected as a carrier. After separated to color difference signal (R–Y, B–Y and G–Y) by the matrix circuit, these are output as R signal (Pin No. ㊴), G signal (Pin No. ㊳) and B signal (Pin No. ㊲) via the Y/C mixing circuit. The RGB signal thus output is sent to IC11. Incidentally, the sharpness circuit of this IC is used to control the frequency at the time of either video or Y/C signal input and characteristics at the time of R/G/B/sync input. (Adjusted by RV16)

2-4-14. RGB Interface (IC11)

IC11 (CXA1024S) perform switching between the R/G/B/sync and other input signals (video or Y/C signal), and amplifies and clamps the signals for subsequent stage operations.
Also, the processing of user controls "BRIGHT" and "PICTURE" is done here.
IC11 is an IC that adjusts the RGB interface and automatic white balance of the color television unit and color display.
Incidentally, the automatic white balance in this case implies to compensate for changes with age generated in a conventional CRT display. It is not therefore used for automatic offset of visual white balance on a real-time basis.

The RGB signal from the R/G/B/sync input section are fed to Pin Nos. ⑤, ⑥ and ⑦ respectively. The RGB signal decoded by IC10 from Y/C or video input signal is fed to Pin Nos. ⑰, ⑱ and ⑲ respectively. A switchover between the two signals is made at Pin No. ⑨, and an input signal from IC10 is selected when it is high level, and a signal from the R/G/B/sync when it is low level.
The signal components of the output signal from IC11 are amplified to about 4 Vp-p by IC12 (R, G) and IC13 (B) and sent to the RGB output amplifier. Also, the output of IC12 and IC13 is split by resistance and returned to IK terminal (R-Pin Nos. ㊹ and ㊺, G-Pin Nos ㊴ and ㊹, and B-Pin Nos. ㉝ and ㉟) of IC11. Here in IC11, the black reference signal for determining the DC offset level according to the pulse fed to Pin Nos. ㉗ and ㉘ and the white reference signal for determining the gain are superimposed in the V blanking section for output, and the portion sample held from the signal which return to IK terminal is compared with the internal reference for constant operation. Also, transistor switches (Q23 to Q25) are driven by the SW signal output from Pin No. ㉛ to change the resistor's dividing ratio of the IK terminal for weighting the white reference signal. (R:Q25, R182 and RV10/G:Q24, R170 and RV12/B:Q23, R166 and RV14)

2-4-15. Outline of RGB Output Amplifier Section

The RGB output amplifier section consists of the slicer, inverting amplifier×2 stages, edge emphasis signal generator and bias circuit. This section finally sends only signal components to the digital system at about 4 Vp-p. "R", "G" "B". "SHARP" processing of the user controller
is done here. The block diagram of this section is shown in Fig. 4.

2-4-16. Bias Circuit

The 6V voltage stabilized by Zener diode D23 is voltage followed by the operational amplifier on one side of IC17 and sent to the (+) side of two stages each of R, G, and B of the inverting amplifier. Also, the voltage of D23 is divided by R306, RV24, and R307, then voltage followed by the other operational amplifier. These are sent to the respective slicers as slice level. This slice level is adjusted for 4.00 ± 0.01 by RV24.

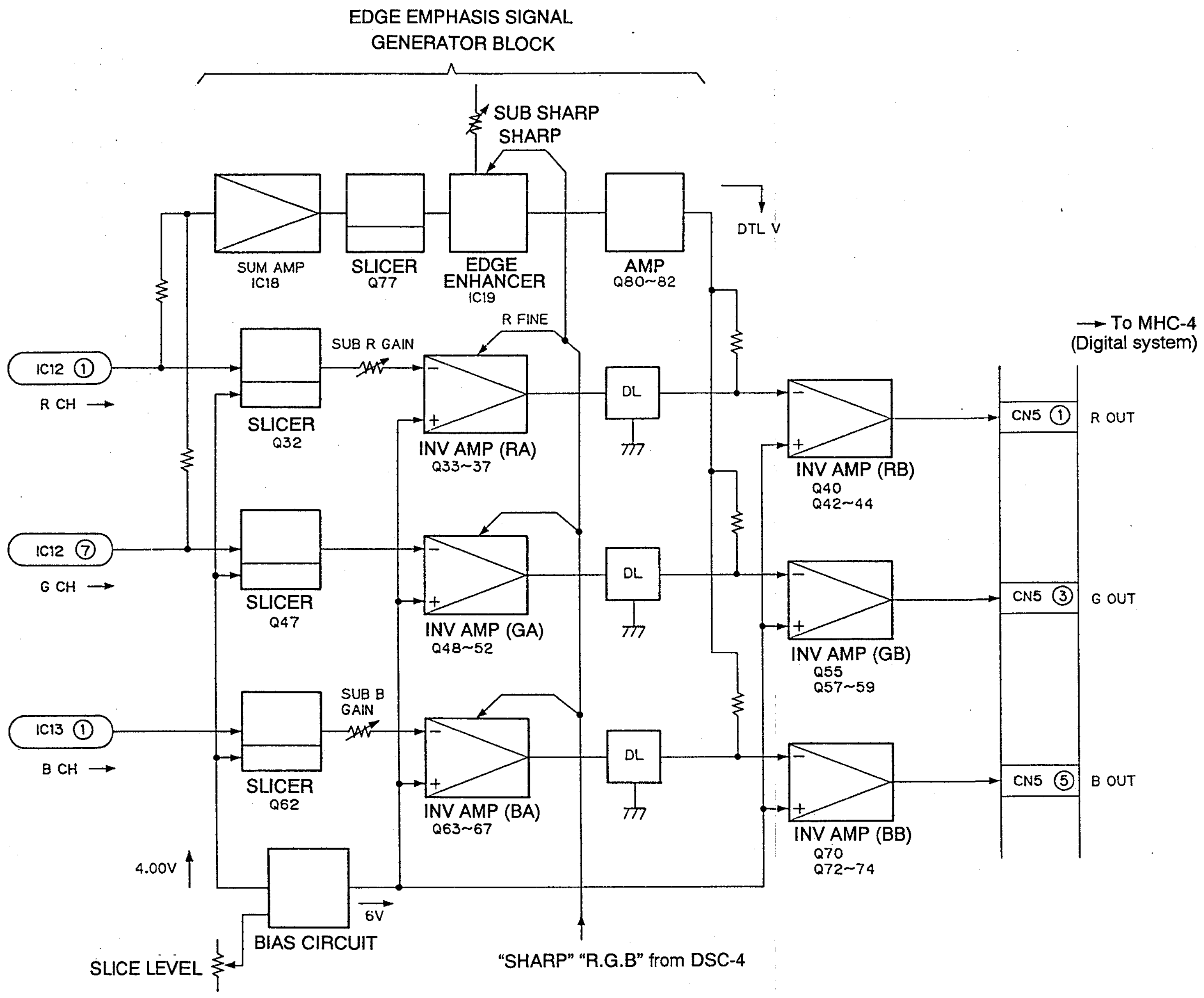

EDGE EMPHASIS SIGNAL GENERATOR BLOCK
SUB SHARP
SHARP
SUM AMP IC18
SLICER Q77
EDGE ENHANCER IC19
AMP Q80~82
DTL V
R FINE
SUB R GAIN
→ To MHC-4 (Digital system)
IC12 ①
R CH →
SLICER Q32
INV AMP (RA) Q33~37
DL
INV AMP (RB) Q40 Q42~44
CN5 ①
R OUT
IC12 ⑦
G CH →
SLICER Q47
INV AMP (GA) Q48~52
DL
INV AMP (GB) Q55 Q57~59
CN5 ③
G OUT
SUB B GAIN
IC13 ①
B CH →
SLICER Q62
INV AMP (BA) Q63~67
DL
INV AMP (BB) Q70 Q72~74
CN5 ⑤
B OUT
4.00V
6V
BIAS CIRCUIT
SLICE LEVEL
"SHARP" "R.G.B" from DSC-4

Fig. 4

2-4-17. Edge Emphasis Signal Generator Circuit

The edge emphasis signal (DTL-V) intended for applying the sharpness is generated here. First, a pseudo Y signal is created from the R and G signals from IC12 by the NAM amplifier consisting of IC18. The B signal is not added here, since the B signal with little Y component may deteriorate the S/N ratio. Then pseudo Y signal is sliced at blanking section with slicer of Q77 and fed to Pin No. ③ of IC19.

IC19 (NJM2209) is used for improving the quality of video image. The output of the internal secondary differential control amplifier is output from Pin No. ① , and used as DTL-V. Also, the user control "SHARP" is connected to Pin No. ⑨ for control of the output of the secondary differential amplifier. The output of Pin No. ① of IC19 is inverting amplified to about 12 dB by Q80 to Q82, after which it is sent to the 2nd stage of R, G, and B of the inverting amplifier and added to the signal.

2-4-18. Slicer

The signal sent from IC12 and IC13 is;pedestal level=4V and blanking level=0V. The slicer has the function of replacing the blanking section with DC potential (slice level) having little drift to the signal. The signal sent to the digital system thereafter is clamped before being A/D converted.

The theory of operation is that one side of emitter common 2-terminal composite transistor operates as an emitter-follower. When the base potential at that time falls below the base potential (slice level) of one transistor, it is cut off, and the current from the other transistor is supplied to the emitter resistor. As a result, the signal that has passed here will have its blanking portion sliced.

2-4-19. Inverting Amplifier

The signal passed through the slicer goes through the two

stages each of R, G, and B inverting amplifiers and output to the MHC-4 board of the digital system. To improve the hue of the print out, the gain can be varied a little by using the user control. Adjustment is made when the user controls it using VR1101 "R FINE", VR1102 "G FINE" and VR1103 "B FINE". In case of the R signal, the signal passed through the slicer Q32 is fed to the initial stage of inverting amplifier consisting of Q33 to Q37. This is done to make the potential between both bases of Q34 equal by the differential type video amplifier.

This portion is provided for offsetting the thermal characteristics of the thermal head of this unit. The signal passed through this amplifier does edge emphasizing based on the differing time constant at the rise and fall time.

(1st-differential type)

The signal from the initial stage of inverting amplifier is delayed to the extent of 170 nS by the delay line and fed to the 2nd stage of inverting amplifier. Here, the polarity is returned to the original condition, and the edge emphasis signal (DTL-V) is superimposed. The delay line is incorporated so that the phase is set with this emphasis signal.

The 2nd stage of inverting amplifier is the same as that of the initial stage. This signal becomes the final output signal of the input processing block.

2-5. VA-3 BOARD (2) – OUTPUT PROCESSING BLOCK

2-5-1. RGB Amplifier

To the RGB amplifier, the RGB signal is sent from the MHC-4 board of the digital system for monitoring purposes. Here, the gain can be varied by using the user control to set the color hue of printout with that of the monitor screen image. To be more specific, this is done as the user makes adjustment by turning RV708 (R), RV709 (G), and RV710 (B) on the IF-13 board located at the rear panel. The R signal is mainly described below.

The R signal sent from the MHC-4 board is buffered by the emitter-follower of Q101, and fed to the base ground amplifier consisting of Q102 and Q103. Q102 is a variable resistor element, and the afore-mentioned RV708 (R) is connected to Pin No. ④ . Also, RV26 is intended to adjust the balance among R, G, and B, including the deviations after D/A conversion of the digital system. (RV28 for B signal is the same.)

The signal passed through the base ground amplifier is buffered by the emitter-follower of Q104 and sent to IC22 (PAL encoder). Incidentally, the amplifier gain mentioned above is nearly 0 dB. Also, the signal sent from the digital system becomes 100% white when the memory has been cleared.

At that time, the digital system is adjusted so that the signal level sent to IC22 becomes 1.0 Vp-p which is as specified for IC22.

2-5-2. CRT Controller (IC21)

Various settings of this unit are done on the monitor screen menu. Therefore, information of the system control system should be superimposed on the output signal to be fed to the monitor set.

IC21 (CXD1050A-10P) outputs character signal to be displayed on the monitor screen and the control signal as well by using the superimposing function of IC22 (V7040).

The internal ROM of IC21 contains character data (96 types). When a character display command comes from the system control system, the character signal is output from Pin Nos. ⑱ (R), ⑲ (G), and ⑳ (B) at the CMOS level, and sent to IC22 via gate IC and the level converter circuit. The indication timing is determined based on the sync signal sent from the sync processing system to Pin Nos. ⑦ (H-IN) and ⑧ (V-IN).

2-5-3. PAL Encoder (IC22) and Output Section

IC22 (V7040) superimpose the character signal sent from IC21 over the signal sent from the RGB amplifier and encodes the signal into PAL signal. The signals fed to Pin Nos. ④ (R), ⑤ (G) and ⑥ (B) are superimposed the character signals, after which these signals are output from Pin Nos. ㉓ (R), ㉒ (G) and ㉑ (B) via a built-in 75Ω driver amplifier. This output is passed through the level variable circuit (R:R445 to R448 and RV33/G:R450 to R453 and RV34/B:R455 to R458, RV35) to become an output signal to the interface block.
Internally, the encoded signal is once output as Y and chroma signals from Pin Nos. ⑭ (Y) and ⑬ (C), passed through external delay line and a band-pass filter, and fed to Pin Nos. ⑰ (Y) and ⑯ (C). Then, they are output as composite video signal from Pin Nos. ⑲ and ⑳ via the Y/C mixing circuit and the 75Ω driver amplifier. Here, the output of Pin No. ⑳ is fed to the interface block as an output signal via the level variable circuit (R428 to R431, RV30). Also, the Y and chroma signals output from IC22 are fed to IC23 and amplified, and these output are used as the Y/C output signals to the interface block. The Y/C output levels can also be varied by Y (RV31) and C (RV32), respectively.
Incidentally, these level variable circuits of output sections are adjusted so that the output levels become equal when the unit is set in the THROUGH mode, EE mode, or MEMORY mode.

2-6. MHC-4 BOARD

The MHC-4 board consists of five functional blocks:

(1) A/D and D/A section.
(2) Memory block section.
(3) Print signal generator section.
(4) Control section.
(5) Clock • sync signal generator section.

With these functional blocks, video images for one frame are fetched to the memory for display on the monitor screen. Also, the thermal head is controlled to printout.

2-6-1. A/D and D/A Section

The A/D section consists of an 8-bit A/D converter CXD1175M (IC410, IC430, and IC450), and an analog circuit for making its pre-processing. The analog circuit processes the respective signals of R,G, and B fed from the VA-3 board via CN401 for the A/D converter input. The configuration of the A/D section is shown in Fig. 5.

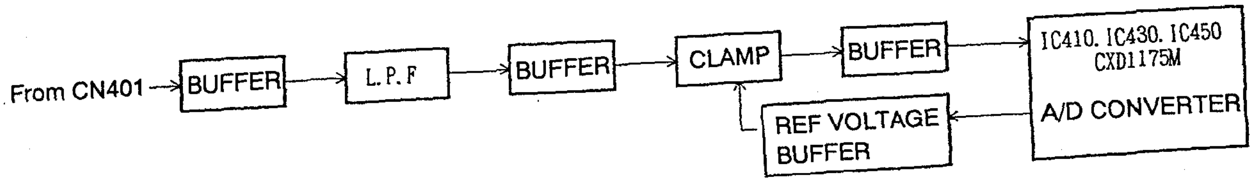

From CN401
BUFFER
L.P.F
BUFFER
CLAMP
BUFFER
IC410. IC430. IC450
CXD1175M
A/D CONVERTER
REF VOLTAGE
BUFFER

Fig. 5

The D/A section consists of an 8-bit 3ch D/A converter CXA1260Q-Z (IC420) and an analog circuit for making post-processing. The analog circuit sends the output of the D/A converter to the VA-3 board via CN402. The configuration of the D/A section is shown in Fig. 6.

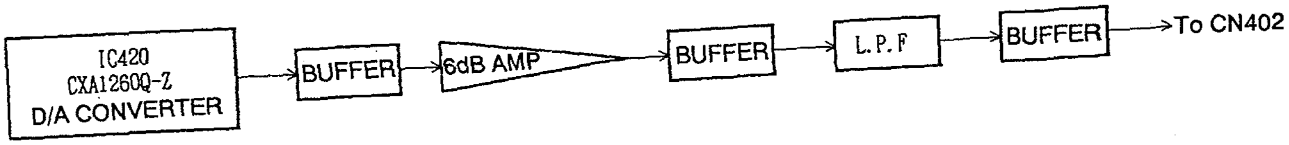

IC420
CXA1260Q-Z
D/A CONVERTER
BUFFER
6dB AMP
BUFFER
L.P.F
BUFFER
To CN402

Fig. 6

2-6-2. Memory Block Section

The memory block stores the video images of one frame. The number of picture elements are 716 (H)×564 (V) (750 (H)×582 (V) (in the wide mode). The memory used is Sony Video Memory CXK1206M.

Rch - 4 pcs. (IC446, IC447:1st field; IC452, IC453:2nd field.)
Gch - 4 pcs. (IC448, IC449:1st field; IC454, IC455:2nd field)
Bch - 4 pcs. (IC458, IC459:1st field; IC456, IC457:2nd field)

Twelve memories are used in total.

The memory blocks are controlled by IC411 and IC412 (D65024GF066-3BA) of the gate array. The gate array generates the memory control signal by the signal of CPU(IC418) mounted in the control section, H sync and V sync. The shape of the gate array is a 100-pin flat package, and the setting given in Table 1 can be made by inputting 28-bit data serially from Pin Nos. ① (data) and ② (clock). Once setting is made, the gate array detects a sync signal fed to Pin Nos. (70) (H sync) and (71) (V sync) to generate a memory control signal for video timing.

Table 1

BIT0.1				BIT2 to 8				BIT9 to15	
Mode Setting				No. of H. Picture Elements				H Blanking	
Full 00	4 split 01	BIT2 MSB	BIT8 LSB	BIT9 MSB	BIT15 LSB	BIT16 MSB	BIT23 LSB	BIT24 MSB	BIT28 LSB

The signal output from the gate array and corresponding signals fed to video memories is given in Table 2.

Table 2

Gate Array (D65024GF-3BA)			Video Memory (CXK1206M)		
Function	Pin Name	Pin No.	Function	Pin name	Pin No.
Memory read (Video timing)	CKR1 VCL1 INC1 HCL1	67 72 73 74	Read port 1	CKR1 VCLR1 INC1 HCLR1	4 10 11 12
Memory write (Video timing)	CKW0 VCL0 INC0 HCL0	67 75 76 77	Write port 0	CKW0 VCLR0 INC0 HCLR0	17 14 15 16
Memory access (Print timing)	CKR2 VCL2 INC2 HCL2	50 37 38 39	Read port 2	CKR2 VCLR2 INC2 HCLR2	36 30 29 28

The respective signals come in a set of four signals, namely, clock, V clear, H clear, and increment. As operation of the video memory, it will be proper to assume that three independent pointers are moved by these signals. As shown in Fig. 7, when a clock is input, the pointer moves to n → n+1 address. So, data of new address is input and output each time a clock is input. When the V clear, H clear, and increment signal are made "H" (high level), the respective pointers move to 0 line 0 address, n line 0 address, or n+1 line 0 address. Data to be input and output changes accordingly. Incidentally, the 1st field is controlled by IC411, and the 2nd field by IC412. The timing for each color of R, G, and B is exactly the same.

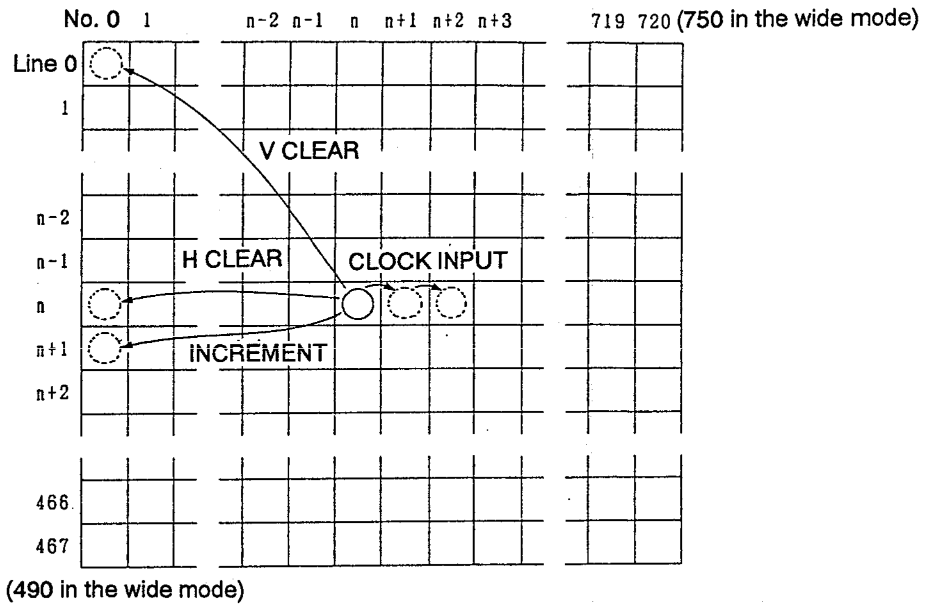


Fig. 7

2-6-3. Print Signal Generator Section

The print signal generator section consists of a line memory 2 (IC428:CXK5814P-45L), a data bus buffer (IC427:LS541), a gate array (IC429:D65012CW-245), and a driver (IC441:HCU04).

Data for one line of print images is written in the line memory 1 of the control section. First, upon reception of a LINE P signal (CN406 Pin No. ⑥) from the SY-board that the print image shifts by one line, then the gate array (IC429) forces BSRQ (Pin No. ㊼) to be low level and sends a bus switching request signal to the CPU (IC418:HD637B01Y) in the control section. In response to this operation, CPU (IC418) switches the bus line over, and when the BSAK signal is made low level (IC429 Pin No. ㊻), data for memory 1 is transferred from the memory 1 to the line memory 2 via a bus buffer (IC427). When the transfer of data for one line is completed, the gate array makes BSRQ (Pin No. ㊼) high level. Next, the gate array repeatedly accesses the data of the line memory 2 and executes the process of internally converting the data into serial signals. As a result, five types of signals, namely, data A (Pin No. (52)), data B (Pin No. (53), shift clock (Pin No. ㊿), latch (Pin No. (51)), and strobe (Pin No. ㊽) are output to the thermal head via CN403 for creation of print images.

The gate array has the function of varying the number of and offset, but in this unit, the number of quantization are fixed at 256, and the volume of offsets can be varied by using switches 1 and 2 of SW402.

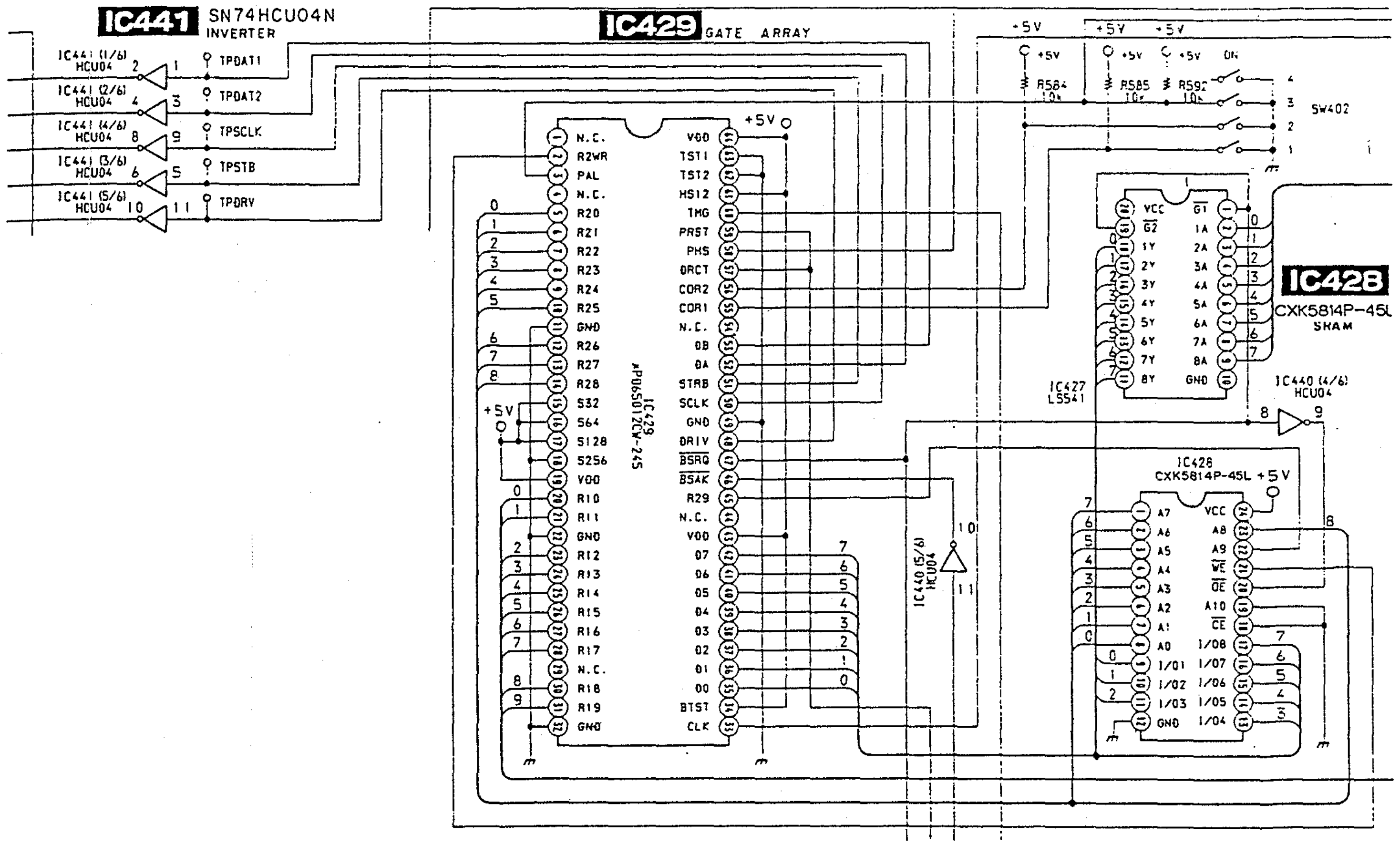

IC441 SN74HCU04N INVERTER
TPDAT1
TPDAT2
TPSCLK
TPSTB
TPDRV
IC429 GATE ARRAY
μPD65012CW-245
+5V
R584
R585
R592
SW402
IC428 CXK5814P-45L SRAM
IC427 LS541
IC440 (4/6) HCU04
IC440 (5/6) HCU04
IC428 CXK5814P-45L

Fig. 8

2-6-2. Memory Block Section

The memory block stores the video images of one frame. The number of picture elements are 716 (H)×564 (V) (750 (H)×582 (V) (in the wide mode). The memory used is Sony Video Memory CXK1206M.

Rch - 4 pcs. (IC446, IC447:1st field; IC452, IC453:2nd field.)
Gch - 4 pcs. (IC448, IC449:1st field; IC454, IC455:2nd field)
Bch - 4 pcs. (IC458, IC459:1st field; IC456, IC457:2nd field)
Twelve memories are used in total.

The memory blocks are controlled by IC411 and IC412 (D65024GF066-3BA) of the gate array. The gate array generates the memory control signal by the signal of CPU(IC418) mounted in the control section, H sync and V sync. The shape of the gate array is a 100-pin flat package, and the setting given in Table 1 can be made by inputting
28-bit data serially from Pin Nos. ① (data) and ② (clock). Once setting is made, the gate array detects a sync signal fed to Pin Nos. ⑳ (H sync) and ㉑ (V sync) to generate a memory control signal for video timing.

Table 1

BIT0.1				**BIT2 to 8**				**BIT9 to15**	
Mode Setting				**No. of H. Picture Elements**				**H Blanking**	
Full 00	4 split 01	BIT2 MSB	BIT8 LSB	BIT9 MSB	BIT15 LSB	BIT16 MSB	BIT23 LSB	BIT24 MSB	BIT28 LSB

The signal output from the gate array and corresponding signals fed to video memories is given in Table 2.

Table 2

Gate Array (D65024GF-3BA)			Video Memory (CXK1206M)		
Function	**Pin Name**	**Pin No.**	**Function**	**Pin name**	**Pin No.**
Memory read (Video timing)	CKR1 VCL1 INC1 HCL1	67 72 73 74	Read port 1	CKR1 VCLR1 INC1 HCLR1	4 10 11 12
Memory write (Video timing)	CKW0 VCL0 INC0 HCL0	67 75 76 77	Write port 0	CKW0 VCLR0 INC0 HCLR0	17 14 15 16
Memory access (Print timing)	CKR2 VCL2 INC2 HCL2	50 37 38 39	Read port 2	CKR2 VCLR2 INC2 HCLR2	36 30 29 28

The respective signals come in a set of four signals, namely, clock, V clear, H clear, and increment. As operation of the video memory, it will be proper to assume that three independent pointers are moved by these signals. As shown in Fig. 7, when a clock is input, the pointer moves to n→n+1 address. So, data of new address is input and output each time a clock is input. When the V clear, H clear, and increment signal are made "H" (high level), the respective pointers move to 0 line 0 address, n line 0 address, or n+1 line 0 address. Data to be input and output changes accordingly. Incidentally, the 1st field is controlled by IC411, and the 2nd field by IC412. The timing for each color of R, G, and B is exactly the same.

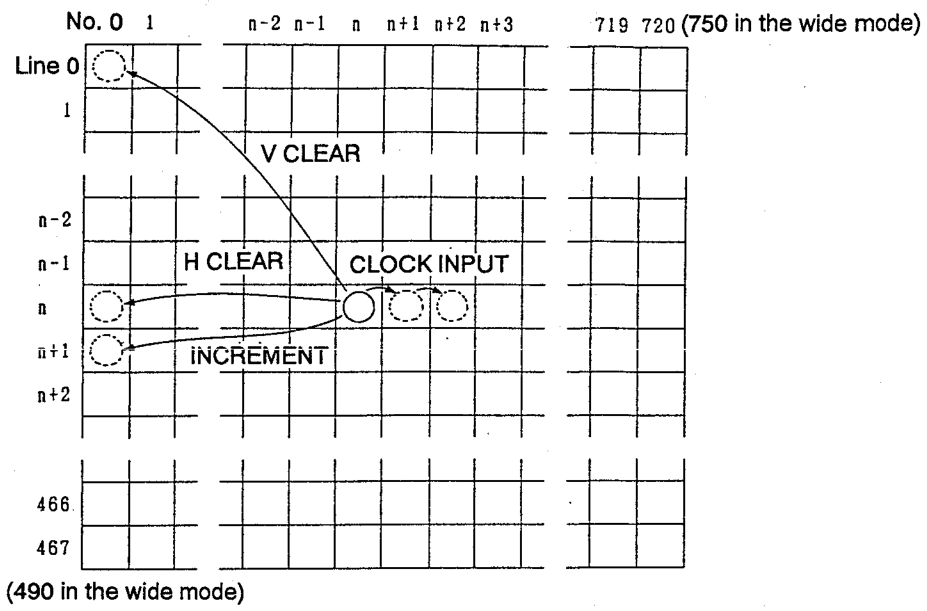


Fig. 7

2-6-3. Print Signal Generator Section

The print signal generator section consists of a line memory 2 (IC428:CXK5814P-45L), a data bus buffer (IC427:LS541), a gate array (IC429:D65012CW-245), and a driver (IC441:HCU04).

Data for one line of print images is written in the line memory 1 of the control section. First, upon reception of a LINE P signal (CN406 Pin No. ⑥) from the SY-board that the print image shifts by one line, then the gate array (IC429) forces BSRQ (Pin No. ㊼) to be low level and sends a bus switching request signal to the CPU (IC418:HD637B01Y) in the control section. In response to this operation, CPU (IC418) switches the bus line over, and when the BSAK signal is made low level (IC429 Pin No. ㊻), data for memory 1 is transferred from the memory 1 to the line memory 2 via a bus buffer (IC427). When the transfer of data for one line is completed, the gate array makes BSRQ (Pin No. ㊼) high level. Next, the gate array repeatedly accesses the data of the line memory 2 and executes the process of internally converting the data into serial signals. As a result, five types of signals, namely, data A (Pin No. (52)), data B (Pin No. (53), shift clock (Pin No. ㊿), latch (Pin No. (51)), and strobe (Pin No. ㊽) are output to the thermal head via CN403 for creation of print images.

The gate array has the function of varying the number of and offset, but in this unit, the number of quantization are fixed at 256, and the volume of offsets can be varied by using switches 1 and 2 of SW402.

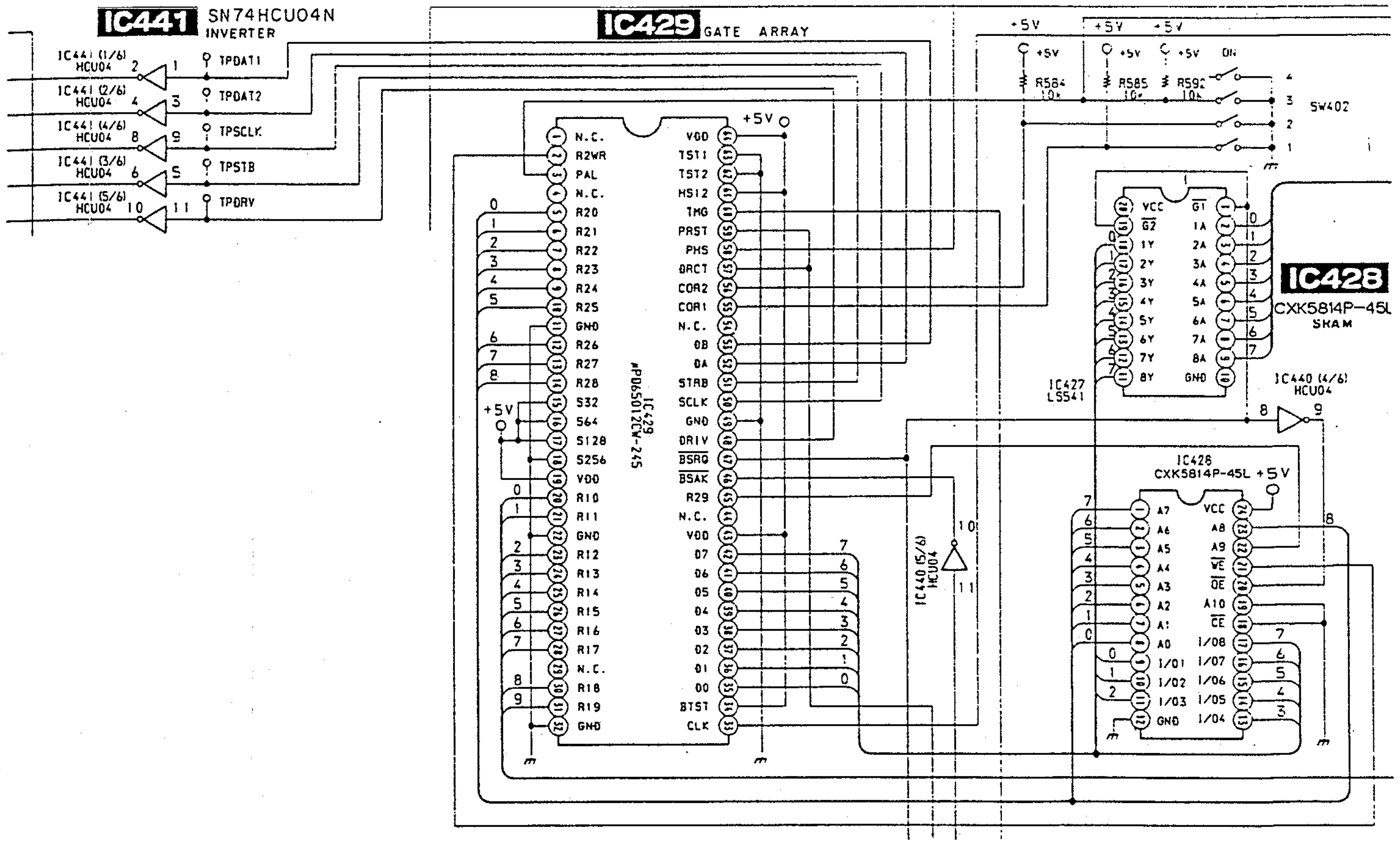

IC441
SN74HCU04N INVERTER
IC441 (1/6) HCU04
IC441 (2/6) HCU04
IC441 (4/6) HCU04
IC441 (3/6) HCU04
IC441 (5/6) HCU04
TPDAT1
TPDAT2
TPSCLK
TPSTB
TPDRV
IC429 GATE ARRAY
IC429 μPD65012CW-245
N.C.
R2WR
PAL
R20
R21
R22
R23
R24
R25
GND
R26
R27
R28
S32
S64
S128
S256
VDD
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
TST1
TST2
HS12
TMG
PRST
PHS
DRCT
COR2
COR1
DB
DA
STRB
SCLK
DRIV
BSRQ
BSAK
R29
D7
D6
D5
D4
D3
D2
D1
D0
BTST
CLK
+5V
IC440 (5/6) HCU04
R584 10k
R585 10k
R592 10k
SW402
IC427 LS541
VCC
G1
G2
1A
2A
3A
4A
5A
6A
7A
8A
1Y
2Y
3Y
4Y
5Y
6Y
7Y
8Y
IC428
CXK5814P-45L SRAM
IC440 (4/6) HCU04
IC428 CXK5814P-45L
A7
A6
A5
A4
A3
A2
A1
A0
A8
A9
WE
OE
A10
CE
I/O1
I/O2
I/O3
I/O4
I/O5
I/O6
I/O7
I/O8

Fig. 8

2-6-4. Control Section

- **Functions of major peripheral ICs of CPU**

The control section is mainly consists of a single chip CPU (8 bits) (IC418:HD637B01Y). Also, it consists of ROM (IC416, IC417) having the gamma masking conversion data, SRAM (IC425) for storing the print data for one line, and SRAM (IC426) for storing data for caption, and ICs for peripheral circuits.

Major peripheral ICs of the CPU and their functions are given in Table 3.

Table 3. Major Peripheral ICs of CPU

Function	Major Component ICs	Contents
Chip select	LC138 (IC413)	Decodes address to select a peripheral circuit.
Gamma masking conversion	μPD27C1001 (IC416) μPD27C2001 (IC417) HC374 (IC414 IC415)	Makes gamma masking conversion from 3-color (R, G, B) data to produce print data.
Data bus buffer	LS245 (IC422)	Separates data bus at the time of print data transfer.
Address bus buffer	LS367 (IC423 IC424)	Separates address bus at the time of print data transfer.
Line memory 1	LS367 (IC423 IC424)	Writes print data for one line from the CPU.
Caption memory	CXK5816SP-12L (IC426)	Stores caption data for printout.
Reset circuit	PST523C (IC444)	Performs CPU resetting operation when resetting the power.
Thermal head temperature sensing	NE555N (IC451)	Converts changes in resistance of thermistor converted into voltage by DUS-3 board into pulses to supply to the CPU.
Serial communications	HC74 (IC435) LS367 (IC423)	Generates control signals of a serial communications with the SY-6 board.
control	F27 (IC436 IC437)	Controls of WE and OE of frame memory.
Frame memory monitor control	LS139 (IC432 IC433) F27 (IC436)	Makes control for gathering the data from the frame memory at the time of printout.

- **Stand-by state software**

In the stand-by state, the CPU (IC418:HD637B01Y) waits for an input of a signal either MEMORY/E E (CN406:Pin No. ①), PRINT (CN406: Pin No. ②), FETCH (CN406:Pin No. ⑦), or serial communication data from the SY-6 board. At the same time, it measures the temperature of the thermal head as it is fed by being converted into pulse width, thereby permitting the head preheat pulse to be turned ON and OFF. Also, because this signal is triggered by the V sync signal, the process setting the timing to the V sync signal is made by interrupt processing. Upon sensing that the PRINT signal is low level, the CPU immediately starts the RUN mode. When a signal other than that is sensed, the CPU merely changes the flag set in the internal RAM area. and its actual operation begins when the next necessary timing has come. The flags set in the internal RAM area of the CPU are given in Table 4.

Table 4

	BIT0	BIT1	BIT2	BIT3	BIT4	BIT5	BIT6	BIT7
FLAG1	Print 1A1B	Print 1A	Print 1B	Print 2A2B	Print 2A	Print 2B	–	Preheat ON/OFF
FLAG2	Print Normal	Print Wide	Print Split	Print Reverse	Print 25 multi	Print Dual	–	Print Test mode
FLAG3	Memory 1A1B	Memory 1A	Memory 1B	Memory 2A2B	Memory 2A	Memory 2B	–	Memory writing
FLAG4	Memory Split A	Memory Split B	Memory Split C	Memory Split D	–	Wide Test	Memory Clear	ON/OFF Memory
FLAG5	Caption Data transfer	Caption 2 lines	Caption ON/OFF	Test Step	Test High density paper	Middle density paper	Test Lamp	test Color bar
FLAG6	1A1B Wide/ normal	1A Wide/ normal	1B Wide/ normal	2A2B Wide/ normal	2A Wide/ normal	2B Wide/ normal	–	Memory Change Vertical
BLANKING	Horizontal BIT0	Horizontal BIT1	Horizontal BIT2	Horizontal BIT3	vertical BIT0	Vertical BIT1	Vertical BIT2	BIT3

- **V Sync interrupt processing software**

The pulse triggered by the V sync signal is applied to Pin No. ⑳ of the CPU. The CPU detects both the falling edge and the rising edge of this pulse to execute interrupt processing. The processing is done by using the same signal at the time of memory write operation, but the operation in the stand-by state is described here. The operations performed by the CPU depending upon the flag status when detecting interrupt pulse are given in Table 5.

Table 5

Edge Polarity	Flag	Status	Output Pin
Rising edge	EE mode	19	Forces the output to be "H" to turn the A/D converter output ON.
		15, 16	Forces the output to be "L" to turn the memory output OFF.
	1A mode	19	Forces the output to be "L" to turn the A/D converter output OFF.
		15	Forces the output to be "L" to turn the 1B field output OFF.
		16	Forces the output to be "L" to turn the 1A field output ON.
	1B mode	19	Forces the output to be "L" to turn the A/D converter output OFF.
		15	Forces the output to be "H" to turn the 1B field output ON.
		16	Forces the output to be "L" to turn the 1A field output OFF.
	1A1B mode	19	Forces the output to be "L" to turn the A/D converter output OFF.
		15, 16	Forces the output to be "H" to turn the memory output ON.
	Wide mode	13, 14	Set the memory display area to be wide. Reads the value of internal timer to store it as timer value (1).
Falling edge			Reads the value of internal timer and compare it with the timer value (1). If the pulse width is less than 5 ms, the preheat is turned OFF, but if it is more than 5 ms, the preheat is turned ON.

- **Memory write software**

Upon reception of a fetch signal (Pin No. ⑦ of CN406) from the SY-6 board, the CPU starts memory write operation. The memory write operation proceeds while counting the V sync signal. The step chart is given in the table 6.

Table 6

No. of V Sync	Processing Contents
Fetch signal detection	A/D converter output OFF Memory output OFF
1~2	Analog signal stabilization waiting time.
3	Gate array mode setting (normal, print, wide)
4	1A1B, 1A or 1B memory selection
5~6	A/D converter output ON Memory writing
7	A/D converter OFF
8~13	Analog signal stabilization waiting time
14	Memory output ON Memory operation end

- **Print software**

Upon reception of a print signal (Pin No. ② of CN406) from the SY-6 board, the CPU starts print operation. Print mode setting is done by setting the flag in the CPU based on the serial data received from the SY-6 board. This is decided before the print signal changes.

The main flow chart of the print operation is shown in Fig. 9, and the flow chart of the print one line in Fig. 10.

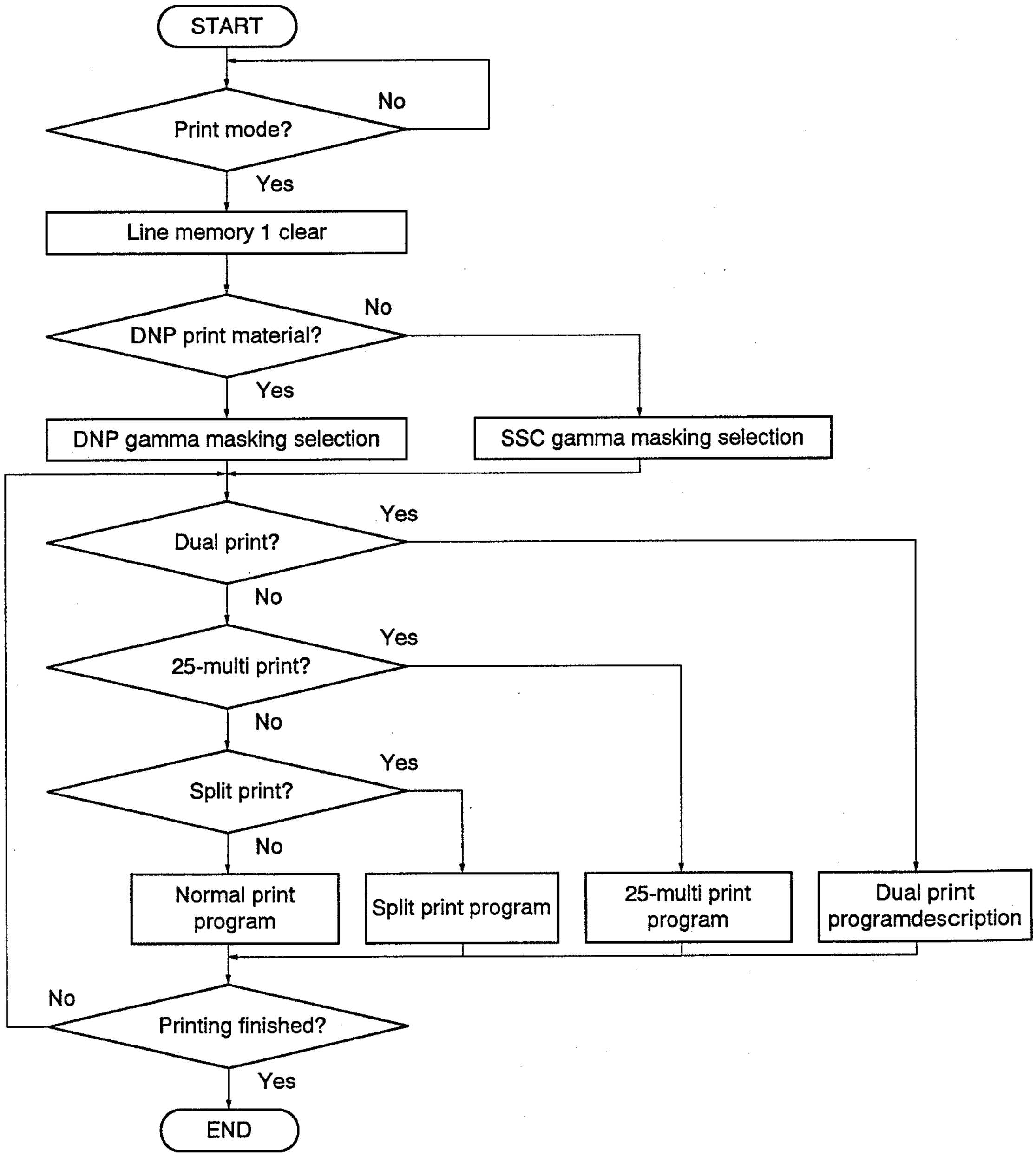

START
Print mode?
No
Yes
Line memory 1 clear
DNP print material?
No
Yes
DNP gamma masking selection
SSC gamma masking selection
Dual print?
Yes
No
25-multi print?
Yes
No
Split print?
Yes
No
Normal print program
Split print program
25-multi print program
Dual print programdescription
No
Printing finished?
Yes
END

Fig. 9

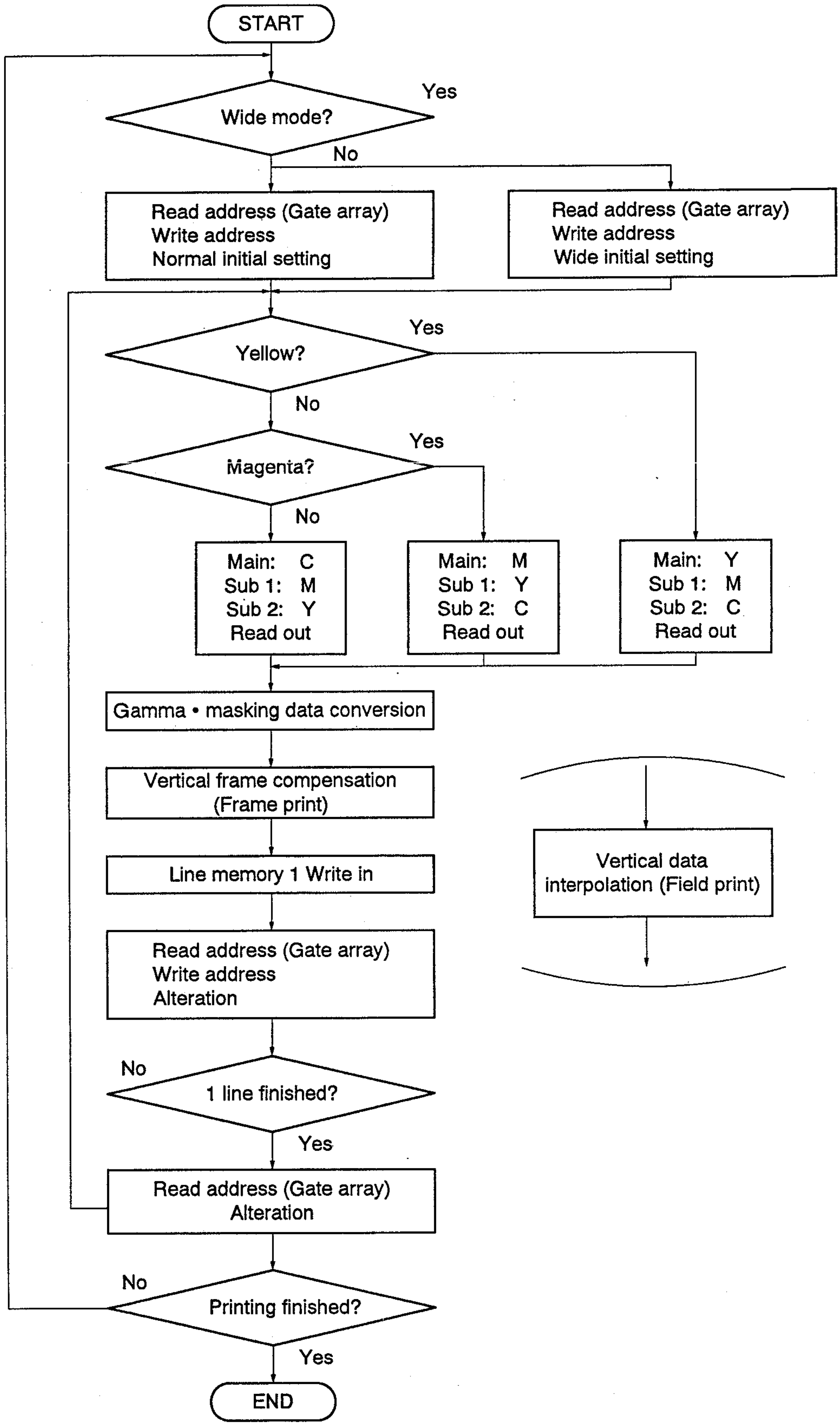

START
Wide mode?
Yes
No
Read address (Gate array)
Write address
Normal initial setting
Read address (Gate array)
Write address
Wide initial setting
Yellow?
Yes
No
Magenta?
Yes
No
Main: C
Sub 1: M
Sub 2: Y
Read out
Main: M
Sub 1: Y
Sub 2: C
Read out
Main: Y
Sub 1: M
Sub 2: C
Read out
Gamma • masking data conversion
Vertical frame compensation
(Frame print)
Line memory 1 Write in
Read address (Gate array)
Write address
Alteration
No
1 line finished?
Yes
Read address (Gate array)
Alteration
No
Printing finished?
Yes
END
Vertical data
interpolation (Field print)

Fig. 10

2-6-5. Clock Sync Signal Generator Section

The clock signal generator section mainly consists of CXD1332P (IC419). Other components are a flip-flop (IC434) and several gate ICs. IC419 generates a clock with an externally provided 14.318 MHz crystal oscillator (X401), and controls the phase based on the signal applied from Pin No. ⑨. The phase controlled clock is output from Pin No. ⑦, passed through HCU04 (IC440), and fed to the flip-flop (IC434) and HCU04 (IC440) via a glitch eliminator circuit (R553 and C553). In the flip-flop, the phase with the H sync signal is detected to create a glitch mask signal. The clock is mixed with the glitch mask signal in the HC00 (IC442) to become a CLK1 signal. On the other hand, the H sync signal is delayed by the delay control circuit (RV403 and C446), fed to the flip-flop (IC434), and passed through the HCU04 (IC460) to be input into the gate array (IC411 and IC412). The timing charts of these signals are shown in Fig. 11.

On the other hand, the internal signal generator section consists of CXD1030M (IC421) and its peripheral elements. IC421 causes a composite sync signal (Pin Nos. ⑫) and the subcarrier signal (Pin No. ㉖) to be generated by the externally provided crystal oscillator (X403). The subcarrier is shaped waveform by the band-pass filter (FL440) and terminating resistors (R581 to 583), and it, with composite sink signal, is output to the VA-3 board through CN402. The subcarrier signal is adjusted to 14.31818 MHz (± 100 Hz) by CV401. Also, the subcarrier signal is not output in the PAL mode (SW401 switch 3 OFF), and a line alternate signal is output. (See Fig. 12.)

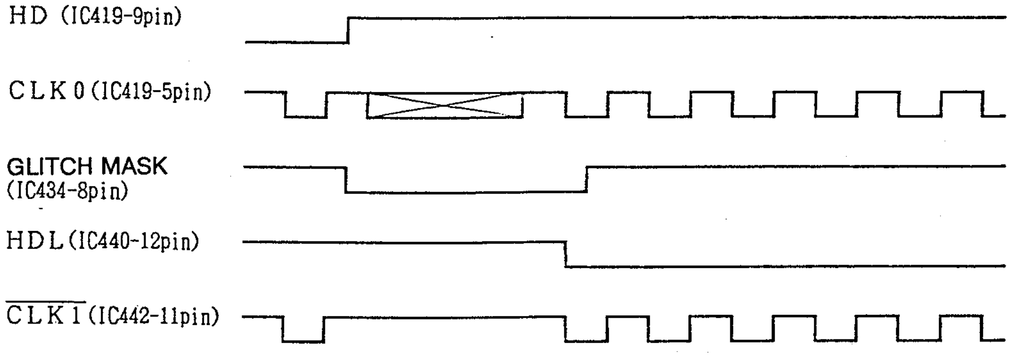


Fig. 11

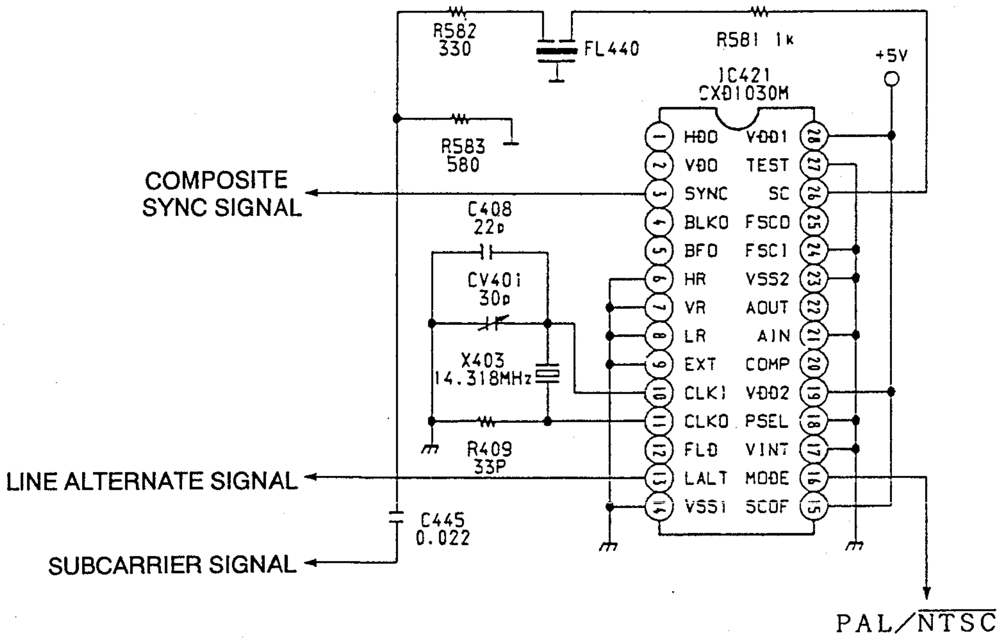
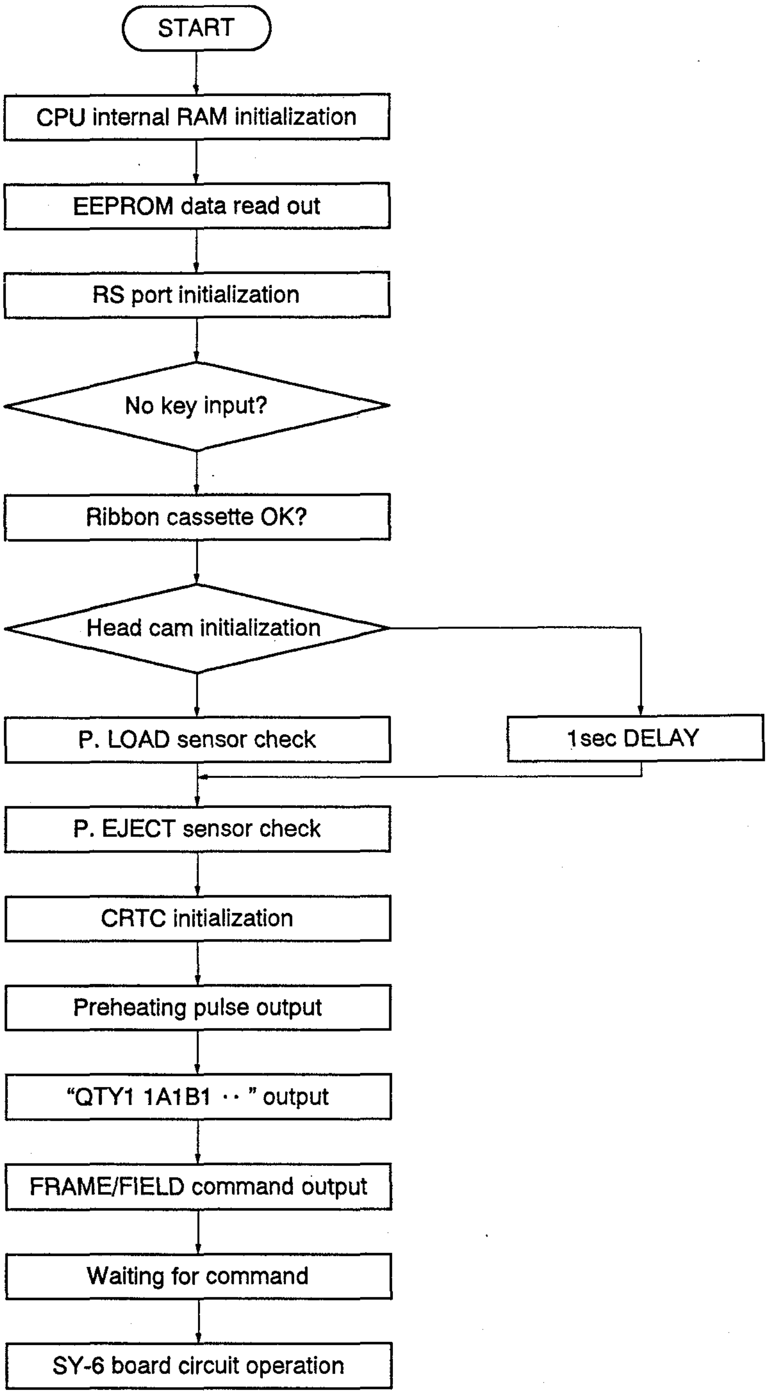

R582
330
FL440
R581 1k
+5V
IC421
CXD1030M
R583
580
COMPOSITE SYNC SIGNAL
C408
22p
CV401
30p
X403
14.318MHz
R409
33P
LINE ALTERNATE SIGNAL
C445
0.022
SUBCARRIER SIGNAL
1 HDO
2 VDO
3 SYNC
4 BLKO
5 BFO
6 HR
7 VR
8 LR
9 EXT
10 CLKI
11 CLKO
12 FLD
13 LALT
14 VSS1
28 VDD1
27 TEST
26 SC
25 FSCO
24 FSCI
23 VSS2
22 AOUT
21 AIN
20 COMP
19 VDD2
18 PSEL
17 VINT
16 MODE
15 SCOF
PAL/$\overline{NTSC}$

Fig. 12

2-7. SY-6 BOARD

The SY-6 board performs system control of this equipment.
The CPU (TMP90C841:IC601) is used for system control, and the LED drive circuit, a front key discriminator circuit, various sensor circuits, an interface with MHC-4 board, a head up/down motor drive circuit, and a platen motor drive circuit are also employed.

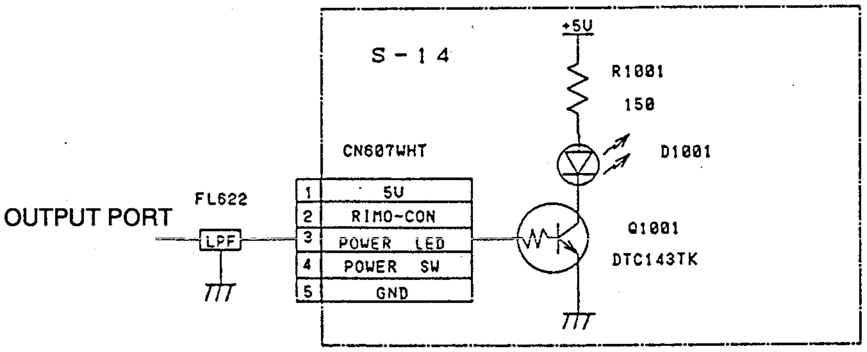
2-7-1. Flow Chart


START
CPU internal RAM initialization
EEPROM data read out
RS port initialization
No key input?
Ribbon cassette OK?
Head cam initialization
P. LOAD sensor check
1sec DELAY
P. EJECT sensor check
CRTC initialization
Preheating pulse output
"QTY1 1A1B1 ·· " output
FRAME/FIELD command output
Waiting for command
SY-6 board circuit operation

2-7-2. LED Drive Circuit

- **Power LED**

The LED lights when the power is switched ON and the system control is in operation.
The LED lights when the level at Pin No. ⑫ of IC606 is high, and goes off when low.


S-14
+5V
R1001
150
D1001
CN607WHT
OUTPUT PORT
FL622
LPF
1 5V
2 RIMO-CON
3 POWER LED
4 POWER SW
5 GND
Q1001
DTC143TK

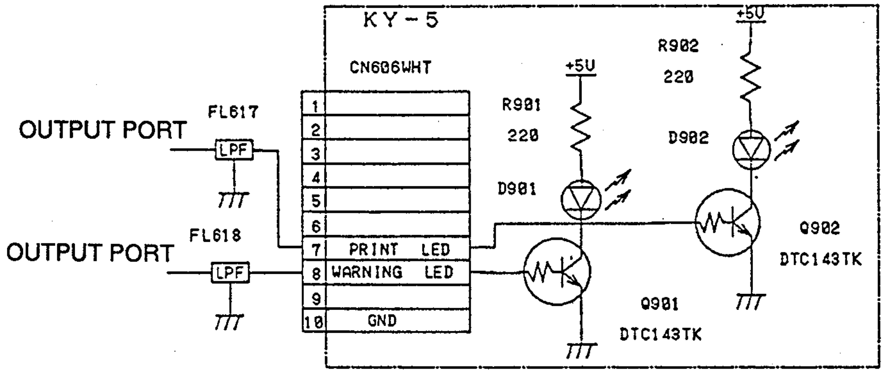
- **Print LED/alarm LED**

Print LED:

The LED lights when the printout starts. and goes off at the end of printout or when an error occurs.
The LED lights when the level at Pin No. ⑭ of IC606 is high, and goes off when low.

- **Alarm LED:**

The LED lights when an error occurs. It goes off upon recovery from the error state.
The LED lights when the level at Pin No. ⑬ of IC606 is high level, and goes off when low.


KY-5
CN606WHT
+5V
R902
220
+5V
R901
220
D902
D901
OUTPUT PORT
FL617
LPF
OUTPUT PORT
FL618
LPF
1
2
3
4
5
6
7 PRINT LED
8 WARNING LED
9
10 GND
Q902
DTC143TK
Q901
DTC143TK

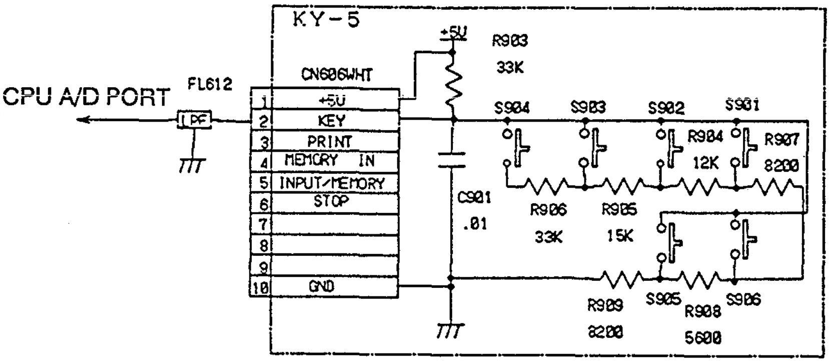
2-7-3. Front Key Input

- **A/D Input key**

When the key is pressed, the voltage corresponding each key is fed to the A/D port (IC601:Pin No. ③ /AN0) of the CPU.

The CPU judges which key has now been pressed by sensing the voltage for longer than 50 ms.

Also, When two or more keys are pressed, the lower voltage key is judged preferentially. The preferential order is as follows, MENU, EXEC, UP, DOWN, LEFT, and RIGHT.


KY-5
CPU A/D PORT
FL612
LPF
CN606WHT
1 +5U
2 KEY
3 PRINT
4 MEMORY IN
5 INPUT/MEMORY
6 STOP
7
8
9
10 GND
+5U
R903
33K
C901
.01
S904
S903
S902
S901
R904
12K
R907
8200
R906
33K
R905
15K
R909
8200
S905
R908
5600
S906

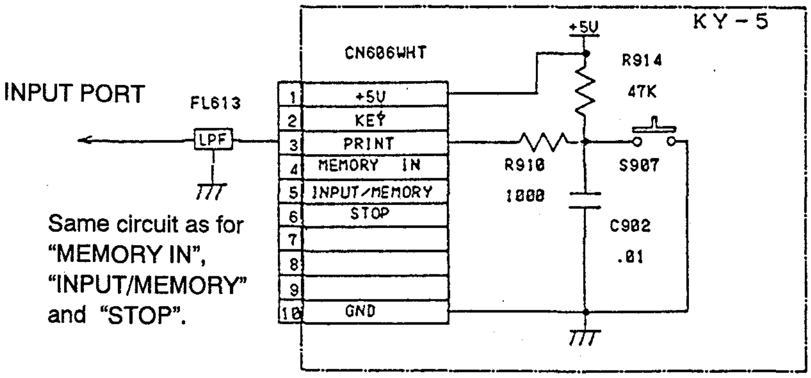
- **Print key and others**

Four keys, ie, PRINT, MEMORY IN, INPUT/MEMORY and STOP feed the following signal levels to Pin Nos. ② to ⑤ of IC603;

When not pressed:High level

When pressed:Low level

When the CPU senses the low level for 50 ms or longer, it judges that the corresponding switch is pressed.


KY-5
INPUT PORT
FL613
LPF
CN606WHT
1 +5U
2 KEY
3 PRINT
4 MEMORY IN
5 INPUT/MEMORY
6 STOP
7
8
9
10 GND
+5U
R914
47K
R910
1000
S907
C902
.01

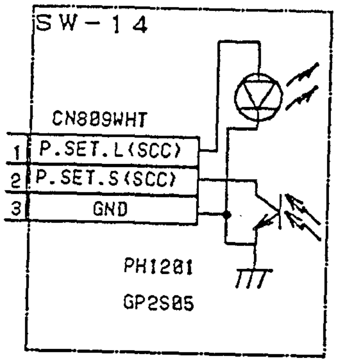
Same circuit as for
"MEMORY IN",
"INPUT/MEMORY"
and "STOP".

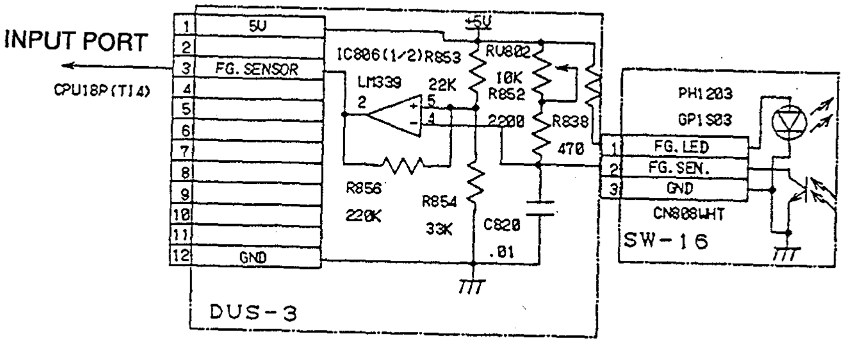
2-7-4. Sensor Inputs

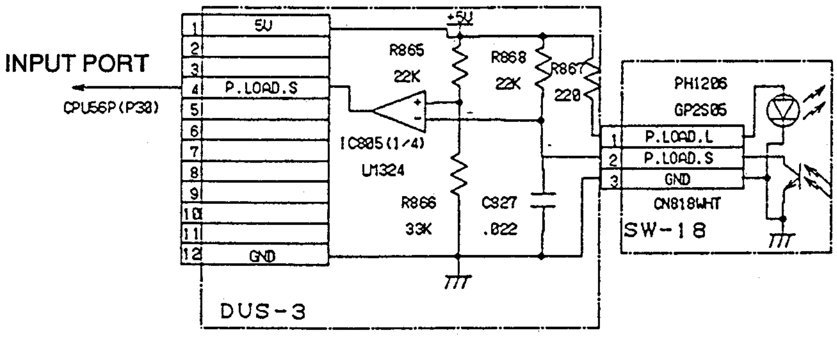
Fig.	Sensor Name	Sensing Method and Function	Sensing Level		Sensor Level
1-5	PAPER SET	Described later	With mark	H	L
			Without mark	L	H
			No paper	H	L
	FG	A pulse is output when the rotary disk provided with 23 equally spaced slits passes through the transmission sensors.	Rotating		
			Not rotating	L or H	H or L
	PAPER LOAD	Reflective sensor which focused on the paper passing path when feeding a paper. It reflects if there are papers. It does not reflect if there are not papers.	No paper	L	H
			Paper exists	H	L
	RIBBON CARTRIDGE	When the ribbon cassette is inserted in the correct position, the micro switch is turned ON, when it is not in the position, the micro switch is OFF.	Cassette exists	L	L
			No cassette exists	H	H
	RIBBON MARK	Judgment is made whether a light is shaded by the ribbon mark passing the sensor.	With mark	H	H
			Without mark	L	L
	PAPER TRAY	Judgment is made whether a light is shaded by the paper in the tray passing the sensor.	No paper	H	H
			Paper exists	L	L
	PAPER EJECT	Reflective sensor which focused on the paper passing path when feeding a paper. It reflects if there are papers. It does not reflect if there are not papers.	No paper	H	H
			Paper exists	L	L
	CAM POSITION	There is a reflector with mark on one of the head drive gears, and each home position mark is sensed.	With mark	H	H
			Without mark	L	L
	HOME POSITION	When the guide S is set in the correct position, the reflection light of the reflective sensor is returned.	With mark	H	H
			Without mark	L	L
	INTERLOCK (OTP)	When the bottom cover is set in the correct position of the bottom plate, the reflection light of the reflective sensor is returned.	Guide S exists	H	L
			No guide S exists	L	H
	INTERLOCK (BOTTOM)		Bottom cover exists	H	L
			No bottom cover exists	L	H
	RIBBON SELECT	The ribbon sorting mark applied to the ribbon cassette (combination of whether "with" or "without" reflection) is sensed by the reflection sensor.		1 2 3 4	1 2 3 4
			SCC color	H H H H	H H H H
			DNP color	L H H H	L H H H
			DNP B/W	L L H H	L L H H

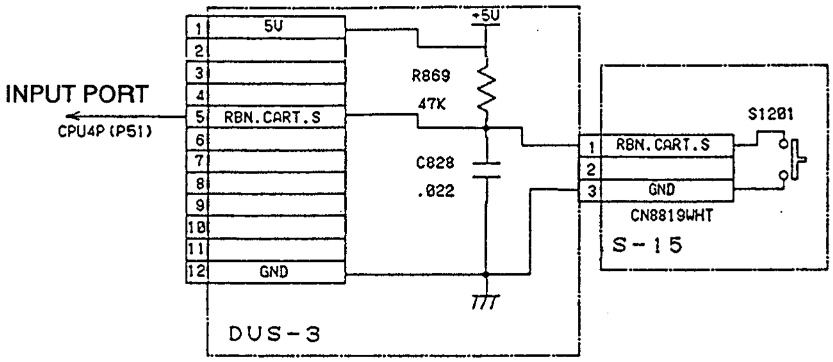
Paper Set Sensor

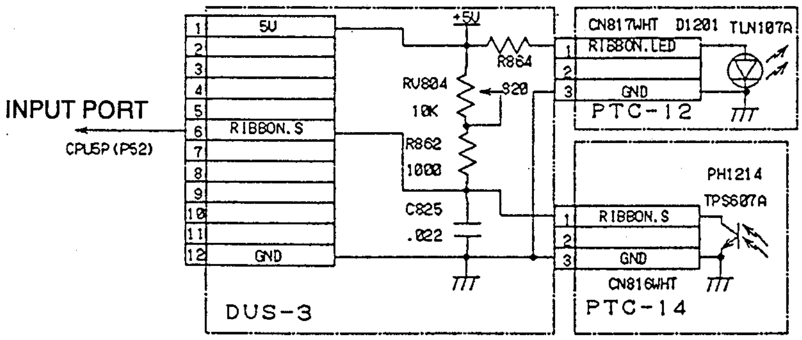
For setting the paper, two sensors are used depending upon the print material. The print material is available in two types:DNP type (UPC-3010) and SCC type (VPM-30ST, etc.) These papers have the respective marks put on the side opposite to each other. The sensor sensing this mark is selected by the judgment mark put on the ribbon cassette. First, the ribbon discrimination mark 1 is used for discriminating between DNP and SCC. (DNP:L/SCC:H) The output of the sensor sensing the No. 1 mark is fed to positive (+) input of the comparator IC806. When the voltage is excess of the threshold voltage (2.5V) ("H"), this voltage is not output to Pin No. ① of the comparator so that the transistor Q807 is turned ON. When this occurs, the sensor output for DNP is grounded and the output (Pin No. ①) of the comparator IC804 is not output. The sensor output for SCC has the diode D801 reversely mounted. Therefore, the voltage is applied to the port by passing through the comparator IC804 directly. Conversely, when the voltage is low level, Pin No. ① of IC806 is pulled to low level so that the sensor for SCC becomes 0.6V in voltage by D801. Then, Pin No. ③ of IC804 ceases to be output, and Q807 is turned OFF. Thus, the sensor output for DNP is fed to the port. Stated in another way, when No. 1 of the ribbon discriminating sensor is high level, the sensor output for SCC is inverted and then fed to port of the CPU. When the sensor output for SCC is low, the output of the sensor for DNP is inverted then fed to port of CPU.

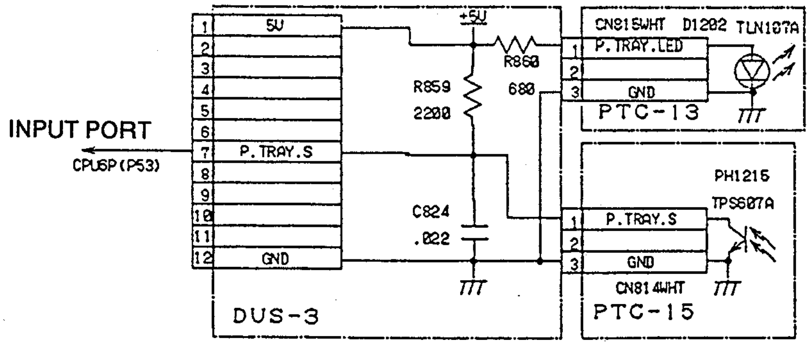

SW-14
CN809WHT
1 P.SET.L(SCC)
2 P.SET.S(SCC)
3 GND
PH1201
GP2S05

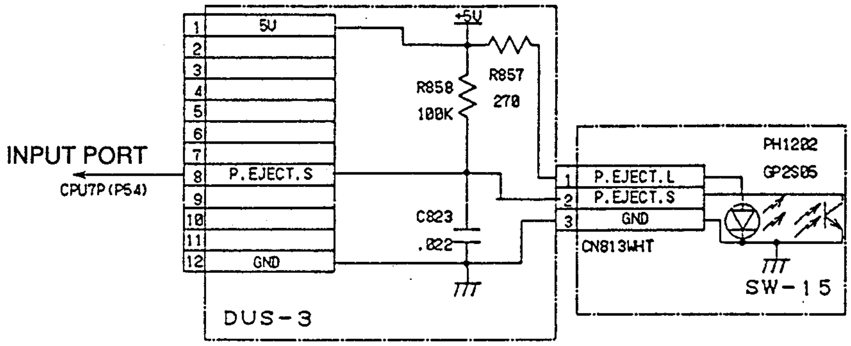

INPUT PORT
CPU18P(TI4)
1 5V
2
3 FG.SENSOR
4
5
6
7
8
9
10
11
12 GND
IC806(1/2)
LM339
2
5
4
+5V
R853
22K
RV802
10K
R852
2200
R838
470
R856
220K
R854
33K
C820
.01
DUS-3
PH1203
GP1S03
1 FG.LED
2 FG.SEN.
3 GND
CN808WHT
SW-16

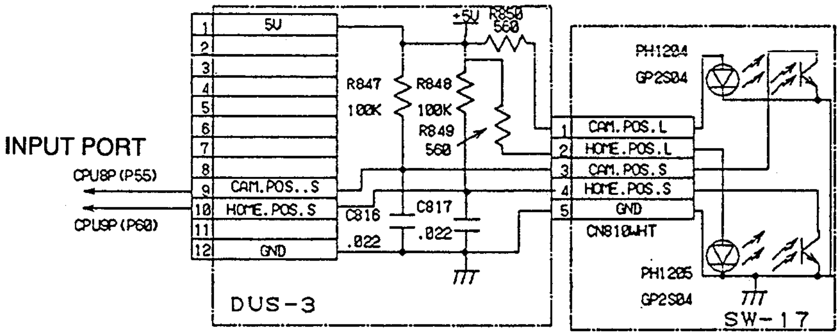

INPUT PORT
CPU56P(P30)
5V
P.LOAD.S
GND
+5V
R865
22K
R868
22K
R867
220
IC805(1/4)
U1324
R866
33K
C827
.022
PH1206
GP2S05
P.LOAD.L
P.LOAD.S
GND
CN818WHT
SW-18
DUS-3

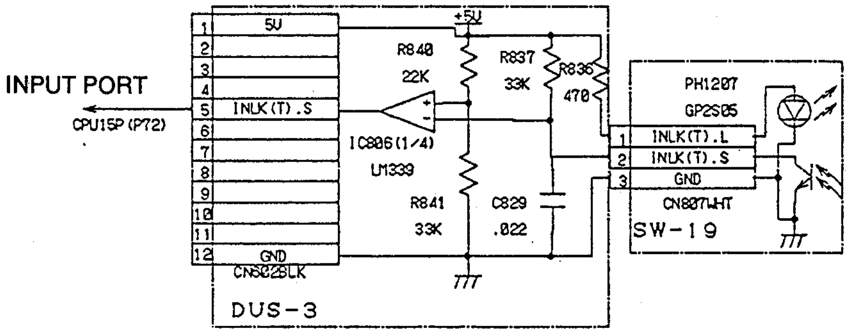

INPUT PORT
CPU4P(P51)
5V
RBN.CART.S
GND
+5V
R869
47K
C828
.022
S1201
RBN.CART.S
GND
CN8819WHT
S-15
DUS-3

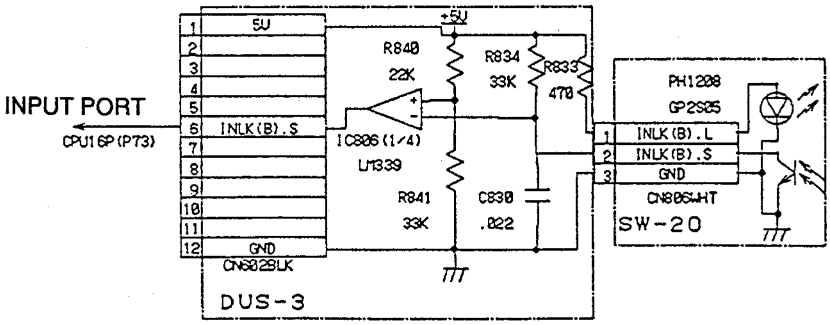

INPUT PORT
CPU5P(P52)
5V
RIBBON.S
GND
+5V
R864
RV804
10K
320
R862
1000
C825
.022
CN817WHT
D1201
TLN107A
RIBBON.LED
GND
PTC-12
PH1214
TPS607A
RIBBON.S
GND
CN816WHT
PTC-14
DUS-3

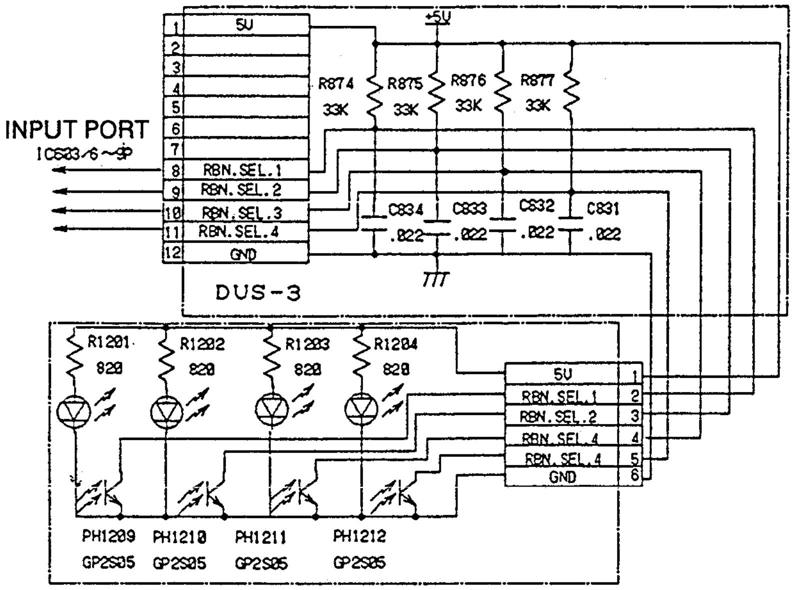

INPUT PORT
CPU6P(P53)
5V
P.TRAY.S
GND
+5V
R860
680
R859
2200
C824
.022
CN815WHT
D1202
TLN107A
P.TRAY.LED
GND
PTC-13
PH1215
TPS607A
P.TRAY.S
GND
CN814WHT
PTC-15
DUS-3


INPUT PORT
CPU7P (P54)
1 5V
8 P.EJECT.S
12 GND
+5V
R858 100K
R857 270
C823 .022
DUS-3
PH1202
GP2S05
1 P.EJECT.L
2 P.EJECT.S
3 GND
CN813WHT
SW-15


INPUT PORT
CPU8P (P55)
CPU9P (P60)
1 5V
9 CAM.POS..S
10 HOME.POS.S
12 GND
+5V
R850 560
R847 100K
R848 100K
R849 560
C816 .022
C817 .022
DUS-3
PH1204
GP2S04
1 CAM.POS.L
2 HOME.POS.L
3 CAM.POS.S
4 HOME.POS.S
5 GND
CN810WHT
PH1205
GP2S04
SW-17


INPUT PORT
CPU15P (P72)
1 5V
5 INLK(T).S
12 GND
CN502BLK
+5V
R840 22K
R837 33K
R836 470
IC806(1/4)
LM339
R841 33K
C829 .022
DUS-3
PH1207
GP2S05
1 INLK(T).L
2 INLK(T).S
3 GND
CN807WHT
SW-19

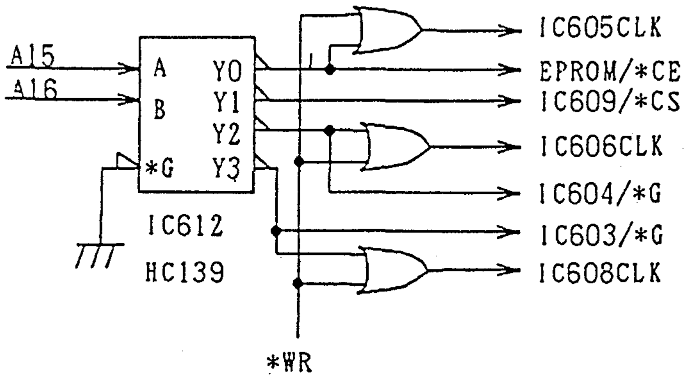

INPUT PORT
CPU16P (P73)
1 5V
6 INLK(B).S
12 GND
CN502BLK
+5V
R840 22K
R834 33K
R833 470
IC806(1/4)
LM339
R841 33K
C830 .022
DUS-3
PH1208
GP2S05
1 INLK(B).L
2 INLK(B).S
3 GND
CN806WHT
SW-20


INPUT PORT
IC603/6~9P
5V
RBN.SEL.1
RBN.SEL.2
RBN.SEL.3
RBN.SEL.4
GND
+5V
R874 33K
R875 33K
R876 33K
R877 33K
C834 .022
C833 .022
C832 .022
C831 .022
DUS-3
R1201 820
R1202 820
R1203 820
R1204 820
5V
RBN.SEL.1
RBN.SEL.2
RBN.SEL.4
RBN.SEL.4
GND
PH1209 GP2S05
PH1210 GP2S05
PH1211 GP2S05
PH1212 GP2S05

2-7-5. CPU Memory Map

Address	
0000H | 7FFFH	Program data EPROM (WS27C256-UP301)
7FFFH	Latch (74HC574/IC605)
8000H	RS-232C I/F (CP9252/IC609)
FECOH | FFCOH	Built-in RAM
FFCOH | FFFOH	Built-in input/output
FFFFH	Latch (74HC574/IC606), gate (74HC540/IC604)
10000H	Latch (74HC574/IC608), gate (74HC540/IC603)

2-7-6. Address Decoder



2-7-7. CPU Port Signal

Note: Port No. and Pin No. do not correspond to each other.

Port	I/O	SIGNAL NAME
P00-P07	IO	DATA 0-7
P10-P26	O	EPROM ADRESS
P27	O	I/O SELECT A
P40	O	I/O SELECT B
P41	O	AO/$\overline{\text{CS}}$ (CXD1050)
P42	I	SCL (CXD1050)
P43	O	SDA (CXD1050)
P50	O	PAPER LOAD SENSOR
P30	I	EEPROM DATA (CXK1013P)
P31	I	$\overline{\text{CS}}$ (MHC-4)
P32	O	TXD (MHC-4) /EEPROM DATA
P33	O	$\overline{\text{CTS}}$ (MHC-4) /$\overline{\text{BUSY}}$ (EEPROM)
P34	I	$\overline{\text{RD}}$
P35	O	$\overline{\text{WR}}$
P36	O	$\overline{\text{WAIT}}$ (NOT USED)
P37	I	KEY ANALOG DATA
P51	I	$\overline{\text{RIBBON CARTRIDGE SENSOR}}$
P52	I	RIBBON MARK SENSOR
P53	I	$\overline{\text{PAPER TRAY SENSOR}}$
P54	I	$\overline{\text{PAPER EJECT SENSOR}}$
P55	I	CAM POSITION SENSOR
P60	I	HOME POSITION SENSOR
P61	I	FETCH RETURN (MHC-4)
P62	I	NOT USED
P63	I	CONTROL 2
P70	I	PAPER SET SENSOR
P71	I	TX READY (CP9252)
P72	I	INTERLOCK TOP SENSOR
P73	I	INTERLOCK BOTTOM SENSOR
P80	I	RX READY (CP9252)
P81	I	FG SENSOR
P82	I	REMOTE CONTROL
P83	O	LINE (PRINT) PULSE (MHC-4)

2-7-8. Expansion Port Signal

IC605

Port	I/O	SIGNAL NAME
POA0	O	NOT USED
POA1	O	$\overline{\text{BLANK}}$ (CXD1050)
POA2	O	BAUD RATE B
POA3	O	BAUD RATE A
POA4	O	$\overline{\text{PRINT}}$ (MHC-4)
POA5	O	FETCH (MHC-4)
POA6	O	C/$\overline{\text{D}}$ (CP9252)
POA7	O	$\overline{\text{CE}}$ (EEPROM CXK1013P)

IC604

Port	I/O	SIGNAL NAME
PIA0 │ PIA6	I	DIP SWITCH 2 │ DIP SWITCH 8
PIA7	I	V-SYNC (VA3)

IC606

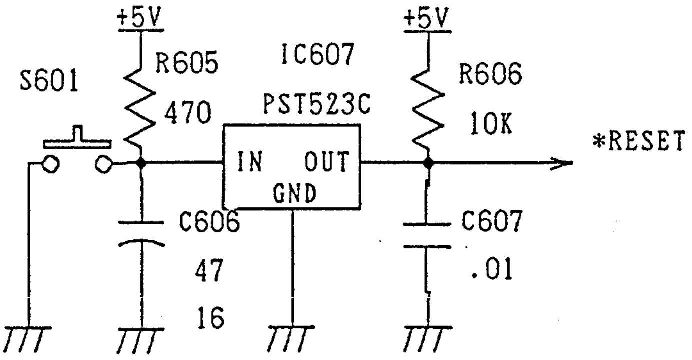
Port	I/O	SIGNAL NAME
POB0	O	EE/$\overline{\text{MEMORY}}$ (VA-3)
POB1	O	$\overline{\text{THRU/EE}}$ (VA-3)
POB2	O	$\overline{\text{RGB}}$
POB3	O	$\overline{\text{Y/C}}$
POB4	O	$\overline{\text{VIDEO}}$
POB5	O	PRINT LED (KY-5)
POB6	O	WARNING LED (KY-5)
POB7	O	POWER LED (S-14)
PIB0	I	PRINT KEY (KY-5)
PIB1	I	MEMORY KEY (KY-5)
PIB2	I	INPUT/MEMORY KEY (KY-5)
PIB3	I	STOP KEY (KY-5)
PIB4	I	RIBBON SELECT 1
PIB5	I	RIBBON SELECT 2
PIB6	I	RIBBON SELECT 3
PIB7	I	RIBBON SELECT 4

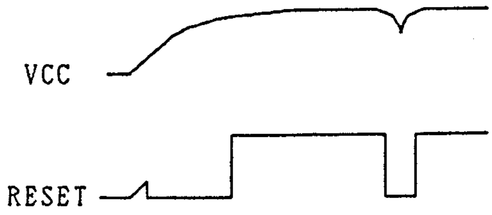
IC608

Port	I/O	SIGNAL NAME
POC0	O	PLATEN MOTOR DRIVE A
POC1	O	PLATEN MOTOR DRIVE B
POC2	O	HEAD MOTOR DRIVE A
POC3	O	HEAD MOTOR DRIVE B
POC4	O	PRINT START (MHC-4)
POC5	O	COLOR A (MHC-4)
POC6	O	COLOR A (MHC-4)
POC7	O	PLATEN MOTOR FEED

2-7-9. Reset Circuit

The power on reset circuit uses PST523C to output a reset pulse of about 60 μsec. Also, when the voltage has fallen below 4.5V with the power OFF, this circuit outputs a reset pulse.

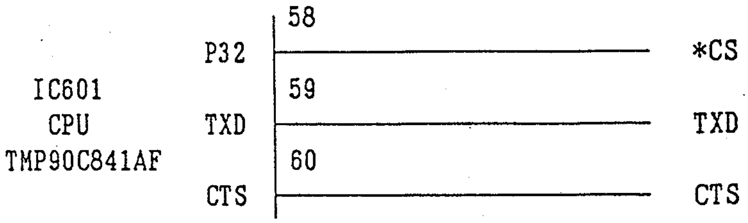

+5V
+5V
S601
R605
470
IC607
PST523C
IN
OUT
GND
R606
10K
*RESET
C606
47
16
C607
.01

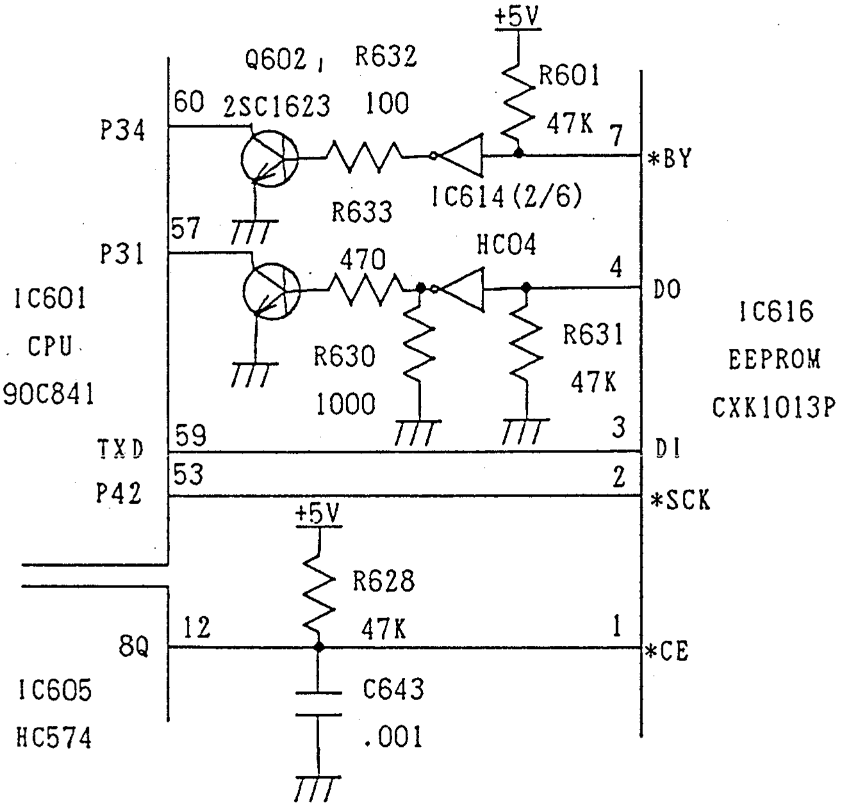


2-7-10. Interface with MHC-4

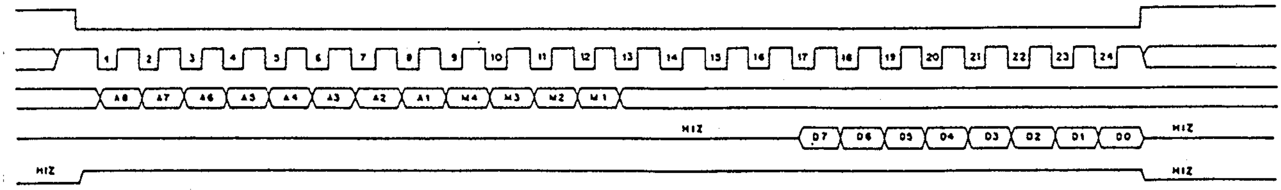
Communication system:serial, async format:8BITS, RARITY NONE, 1200 BAUD, START1

The system controller forces $\overline{\text{CE}}$ to be low when there is desired transmitting data. On the MHC side, $\overline{\text{CTS}}$ is forced to be low when reception is possible. The system controller starts transmitting operation of a data when $\overline{\text{CTS}}$ is made low. The MHC forces $\overline{\text{CTS}}$ to be high when data reception begins, thereby preventing next data to be input. The CPU of the MHC forces $\overline{\text{CTS}}$ to be low after reading the data and waits for next data. The system controller forces $\overline{\text{CE}}$ to be high when there is no more data to be transmitted. Incidentally, TXD and $\overline{\text{CTS}}$ are used for communications with EEPROM also. It is disable when $\overline{\text{CE}}$ is high level.

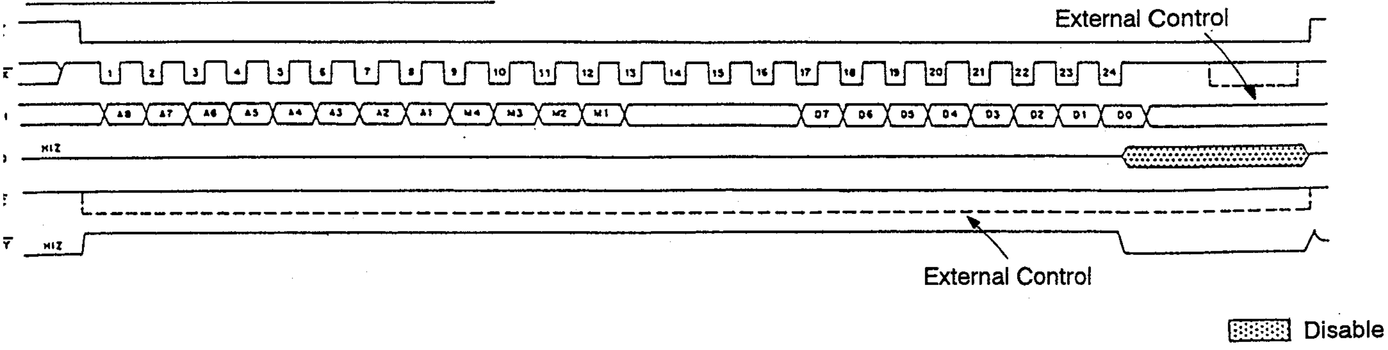

IC601
CPU
TMP90C841AF
P32
58
*CS
TXD
59
TXD
CTS
60
CTS


+5V
Q602, 2SC1623
R632 100
R601 47K
P34
60
7
*BY
IC614(2/6)
R633 470
HC04
P31
57
4
DO
IC601
CPU
90C841
R630 1000
R631 47K
IC616
EEPROM
CXK1013P
TXD
59
3
DI
P42
53
2
*SCK
+5V
R628 47K
8Q
12
1
*CE
IC605
HC574
C643 .001

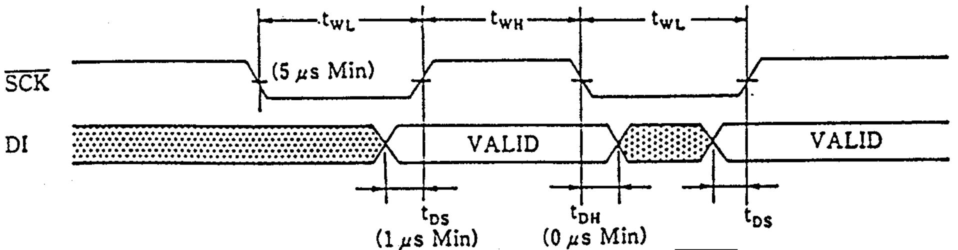
DR(DATA READ)


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A8 A7 A6 A5 A4 A3 A2 A1 M4 M3 M2 M1
HIZ
D7 D6 D5 D4 D3 D2 D1 D0
HIZ
HIZ
HIZ

DW(DATA WRITE),ALDW(ALL BYTE DATA WRITE)

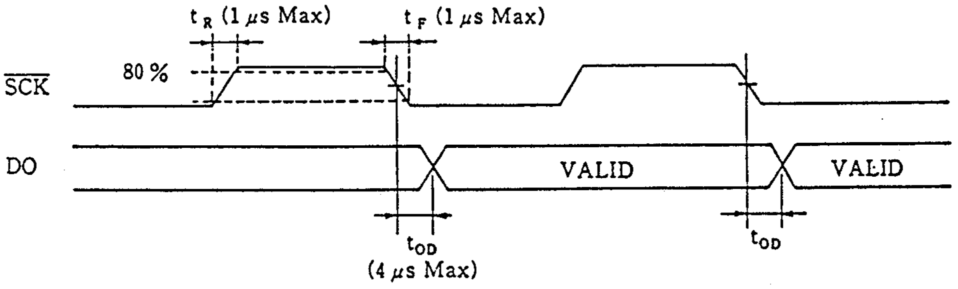

External Control
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
A8 A7 A6 A5 A4 A3 A2 A1 M4 M3 M2 M1
D7 D6 D5 D4 D3 D2 D1 D0
HIZ
HIZ
External Control
▨ Disable

INPUT MODE

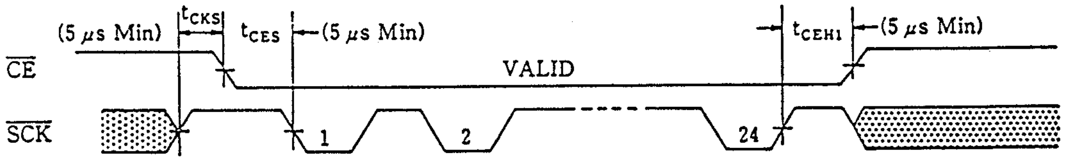

t_{WL}
t_{WH}
t_{WL}
$\overline{SCK}$
(5 μs Min)
DI
VALID
VALID
t_{DS}
(1 μs Min)
t_{DH}
(0 μs Min)
t_{DS}

▨ marked portion is irrelevant to "H" or "L" level.

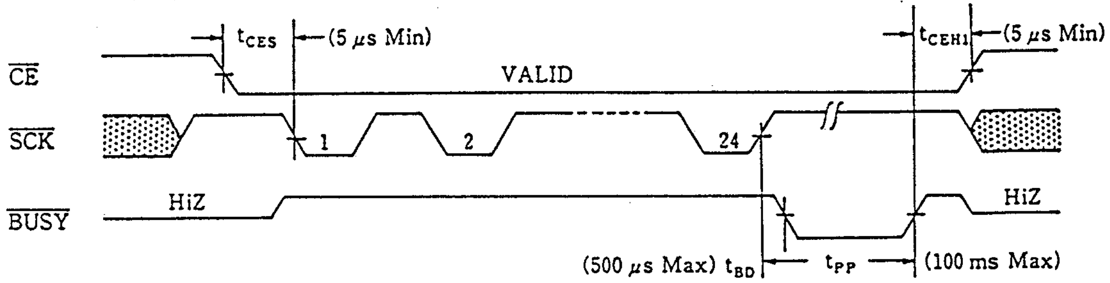
OUTPUT MODE


t_R (1 μs Max)
t_F (1 μs Max)
80 %
$\overline{SCK}$
DO
VALID
VALID
t_{OD}
(4 μs Max)
t_{OD}

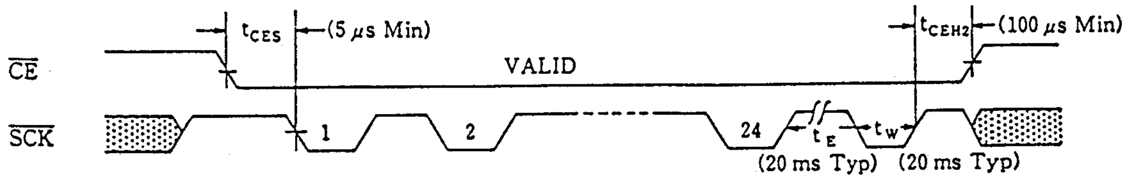
$\overline{\text{CE}}$ TIMING 1 (DR MODE)

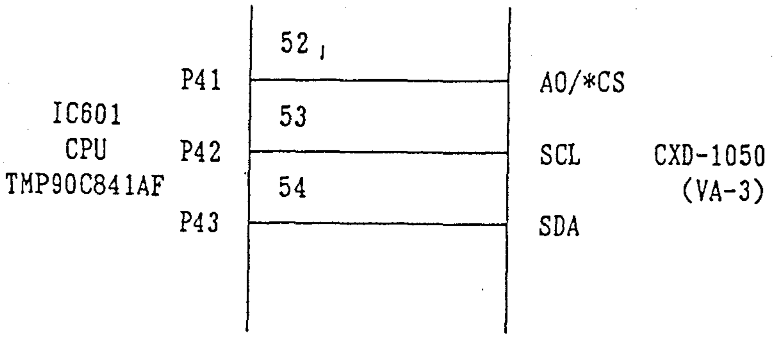

(5 μs Min)
t_{CKS}
t_{CES}
(5 μs Min)
t_{CEH1}
(5 μs Min)
$\overline{CE}$
VALID
$\overline{SCK}$
1
2
24

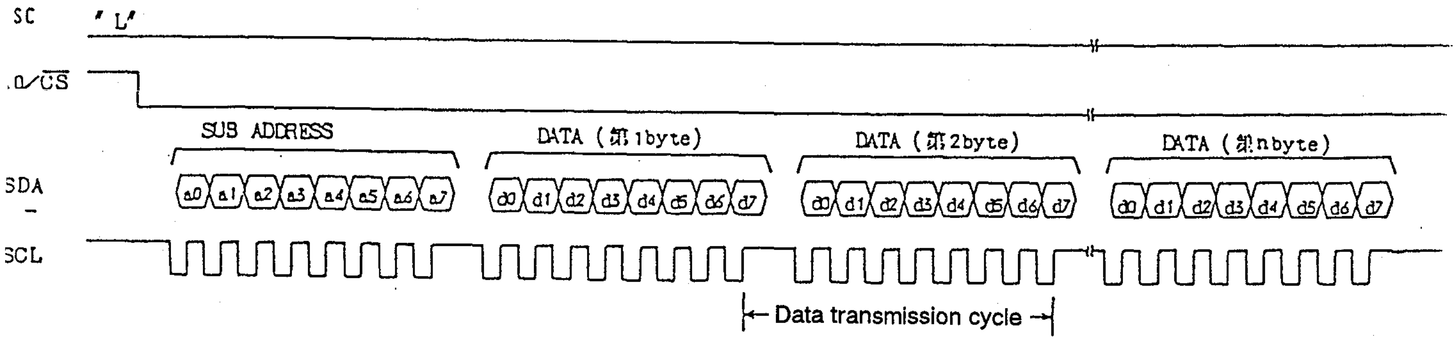
$\overline{\text{CE}}$ TIMING 2 (DW, ALDW MODE, INTERNAL TIMER)


t_{CES}
(5 μs Min)
t_{CEH1}
(5 μs Min)
$\overline{CE}$
VALID
$\overline{SCK}$
1
2
24
$\overline{BUSY}$
HiZ
HiZ
(500 μs Max) t_{BD}
t_{PP}
(100 ms Max)

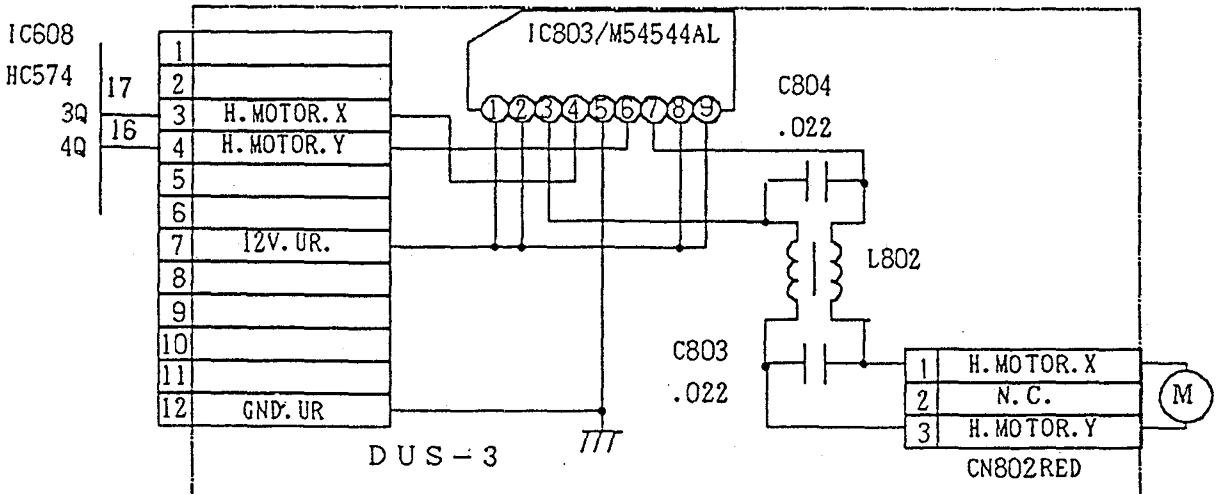
$\overline{\text{CE}}$ TIMING 3 (DW, ALDW MODE, EXTERNAL CONTROL)


t_{CES}
(5 μs Min)
t_{CEH2}
(100 μs Min)
$\overline{CE}$
VALID
$\overline{SCK}$
1
2
24
t_E
t_W
(20 ms Typ)
(20 ms Typ)


IC601
CPU
TMP90C841AF
P41
P42
P43
52
53
54
A0/*CS
SCL
SDA
CXD-1050
(VA-3)


SC
'L'
A0/CS
SDA
SCL
SUB ADDRESS
a0 a1 a2 a3 a4 a5 a6 a7
DATA (第1byte)
DATA (第2byte)
DATA (第nbyte)
d0 d1 d2 d3 d4 d5 d6 d7
Data transmission cycle

2-7-11. Head Up/Down Motor Drive Circuit

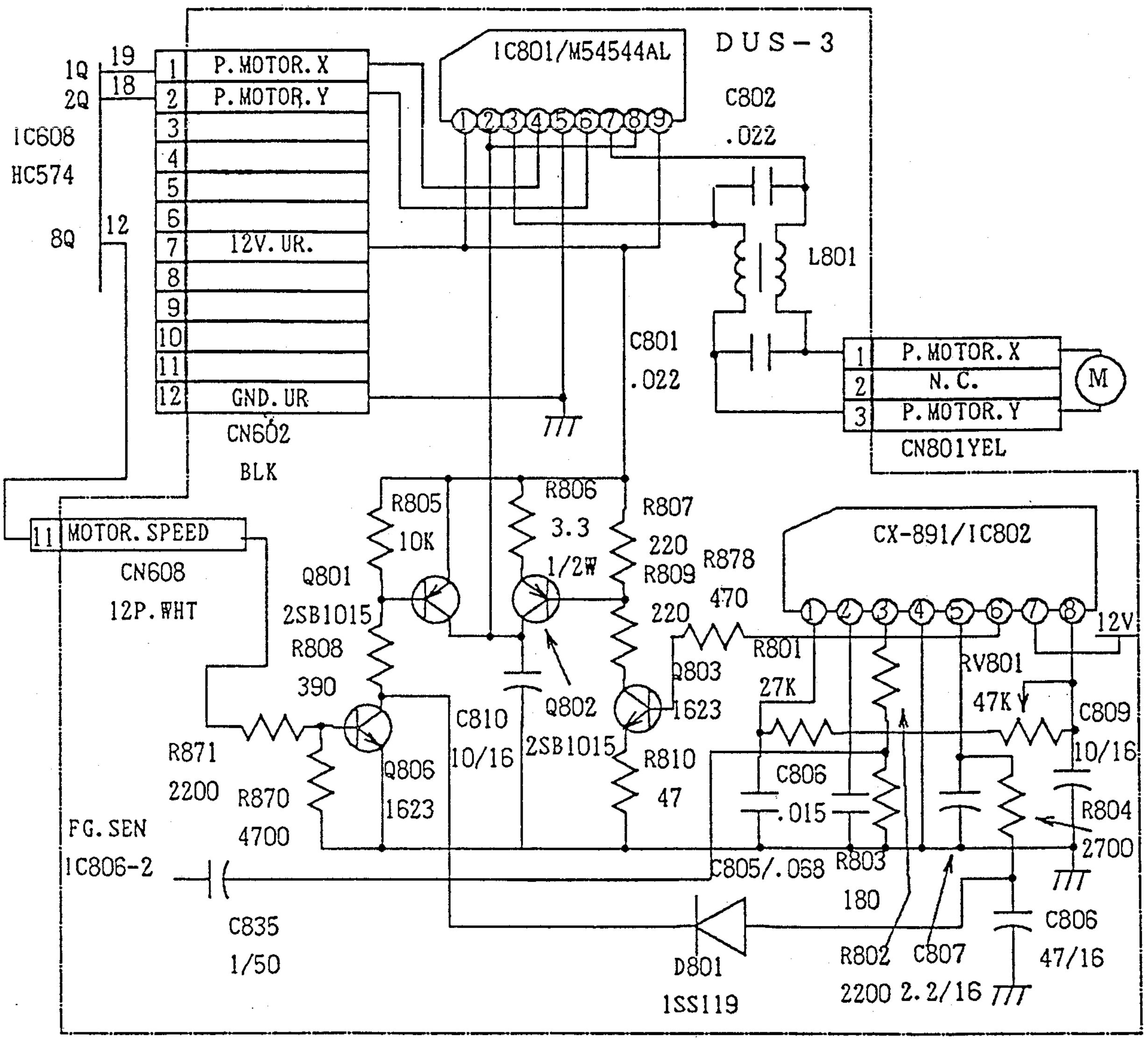

IC608
HC574
3Q
4Q
17
16
1
2
3 H.MOTOR.X
4 H.MOTOR.Y
5
6
7 12V.UR.
8
9
10
11
12 GND.UR
IC803/M54544AL
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
C804
.022
L802
C803
.022
1 H.MOTOR.X
2 N.C.
3 H.MOTOR.Y
CN802RED
M
DUS-3

Head up/down motions are made by the DC motor using a motor drive IC (M54544AL).

IN1	IN2	Motor Operation
L	L	Neutral
L	H	Head down
H	L	Head up
H	H	Brake

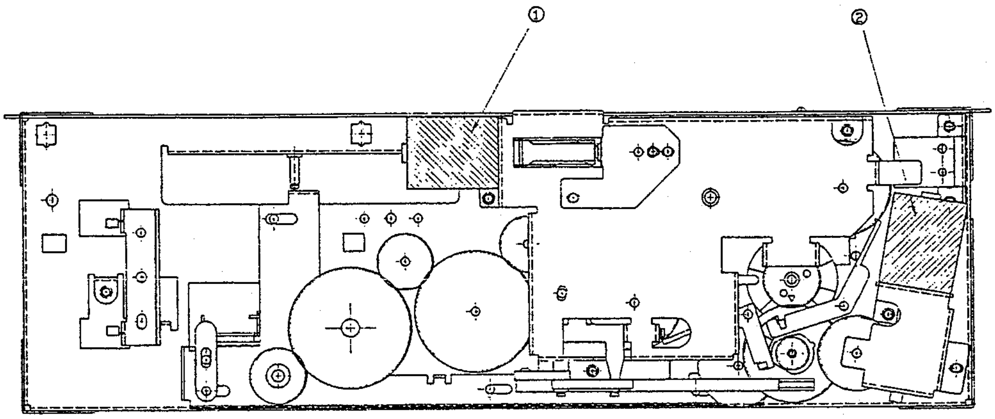
2-7-12. Platen Motor Drive Circuit

The platen motor rotates the paper feed roller, platen, and ribbon roller depending on the position of the head. Just as in the case of the head up/down motor, the platen is driven by the DC motor using M54544AL, but it is necessary to slow-feed the platen at a fixed speed during printout (except when loading and unloading the paper). The fast/slow feed motions are controlled by Pin No. ⑪ of CN608. (Fast feed at high level; slow feed at low level) Also, during slow feed, the servo is placed in operation by CX-891 for control of RPM. This RPM can be varied by RV801. Incidentally, the motor speed is adjusted so that the line pulse (TP606) spacing is 24.5 ± 0.5 μsec. during printout.


1Q
2Q
19
18
IC608
HC574
8Q
12
1 P.MOTOR.X
2 P.MOTOR.Y
3
4
5
6
7 12V.UR.
8
9
10
11
12 GND.UR
CN602
BLK
IC801/M54544AL
① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨
DUS-3
C802
.022
L801
C801
.022
1 P.MOTOR.X
2 N.C.
3 P.MOTOR.Y
CN801YEL
M
11 MOTOR.SPEED
CN608
12P.WHT
R805
10K
R806
3.3
1/2W
R807
220
R809
220
R878
470
Q801
2SB1015
R808
390
Q802
2SB1015
C810
10/16
Q803
1623
R810
47
R801
27K
CX-891/IC802
① ② ③ ④ ⑤ ⑥ ⑦ ⑧
12V
RV801
47K
C809
10/16
R804
2700
R871
2200
R870
4700
Q806
1623
C806
.015
FG.SEN
IC806-2
C835
1/50
C805/.068
R803
180
D801
1SS119
R802
2200
C807
2.2/16
C806
47/16

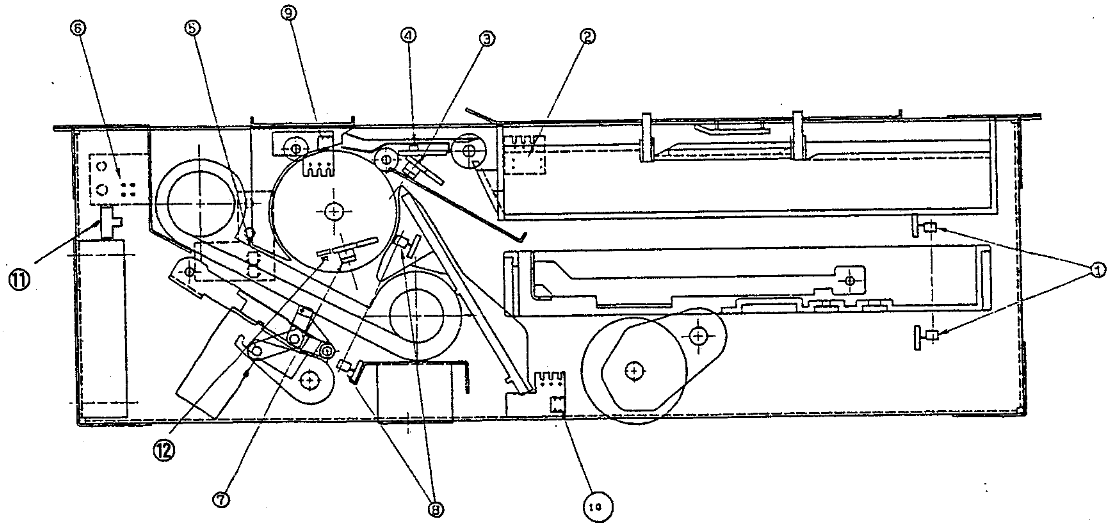
SECTION 3
DESCRIPTION OF PRINTING OPERATIONS

Before mentioning the printing operations, functions of driver motors and sensors used in this printer are described.
Fig. 3-1 and 3-2 show the arrangements of motors and sensors. Descriptions and arrangement of the main parts are shown in Fig. 3-3 and 3-4.



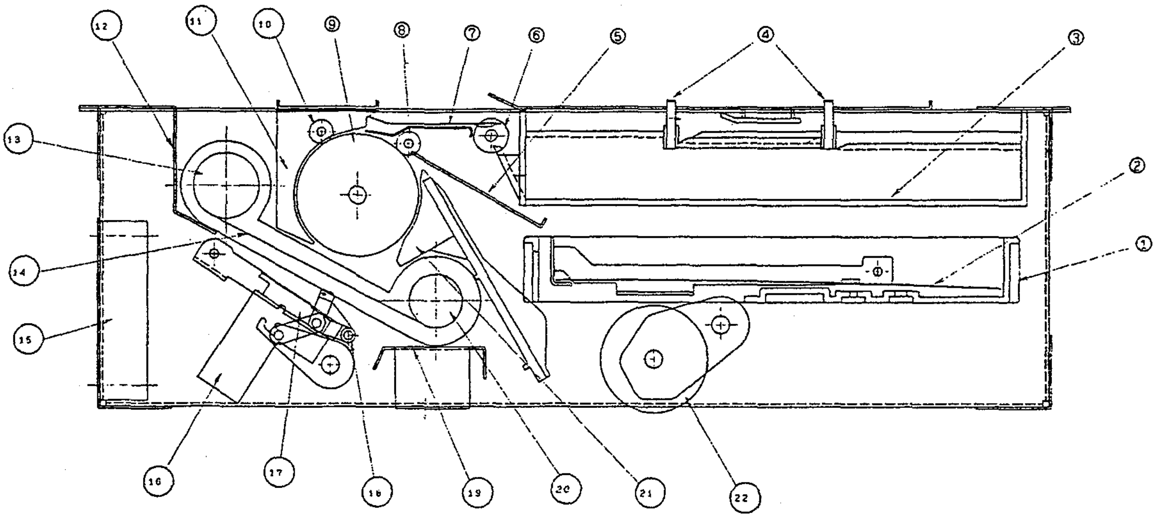
① Platen driving motor
② Head up/down motor

Fig. 3-1. Motor arrangement



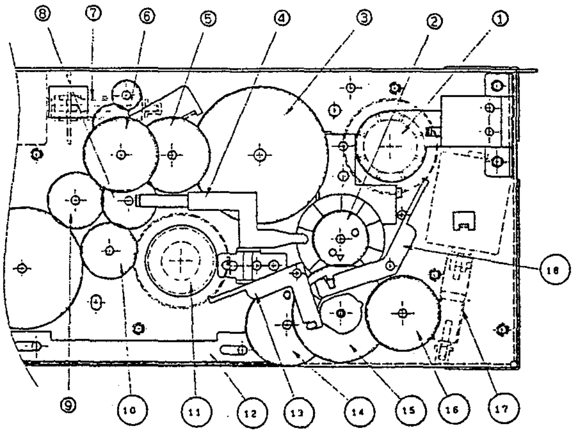
① Paper tray sensor	⑤ Cam and home sensor	⑨ Interlock sensor (top)
② FG sensor	⑥ Cartridge sensor	⑩ Interlock sensor (bottom)
③ Paper feed sensor	⑦ Paper-set sensor	⑪ Ribbon select sensor
④ Eject sensor	⑧ Ribbon sensor	⑫ Paper-set sentor

Fig. 3-2. Sensor arrangement



① Paper feed tray
② Printing paper
③ Paper eject tray
④ Paper eject arm
⑤ Paper feed guide
⑥ Paper eject roller
⑦ Paper eject guide
⑧ Pinch roller (M)
⑨ Platen
⑩ Pinch roller (S)
⑪ Guide (S)
⑫ Ribbon guide (T)
⑬ Ribbon (supply)
⑭ Ink ribbon
⑮ Fan
⑯ Heat sink
⑰ Thermal head
⑱ Ribbon roller
⑲ Ribbon guide (B)
⑳ Ribbon (take-up)
㉑ Guide (M) A'ssy
㉒ Paper feed roller

Fig. 3-3. Main part arrangement



① Limiter (supply)
② Cam gear
③ Platen driving gear
④ Change arm (A)
⑤ Platen idler gear
⑥ Worm wheel (platen)
⑦ Worm gear (platen)
⑧ Change gear (movable)
⑨ Change gear on the paper feed side (fixed)
⑩ Change gear on the ribbon side (fixed)
⑪ Limiter (take-up)
⑫ Link
⑬ Brake (take-up)
⑭ Head driving gear
⑮ Head idler gear
⑯ Worm wheel (head)
⑰ Worm gear (head)
⑱ Brake (supply)

Fig. 3-4. Main part arrangement in the driver block

3-1. MOTOR

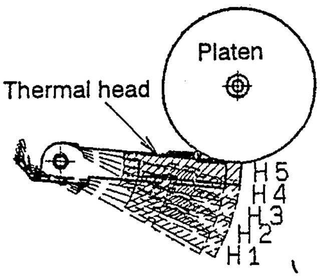
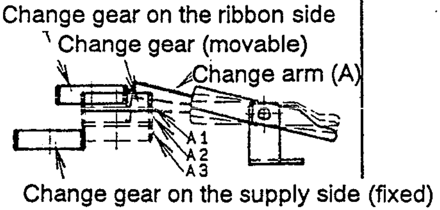
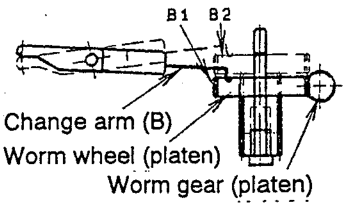
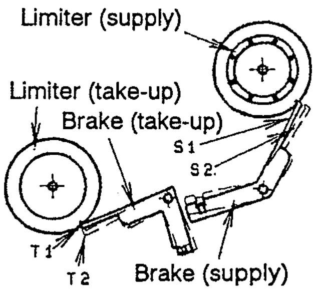
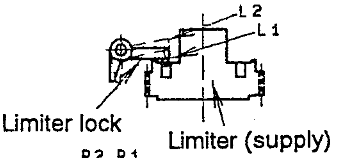
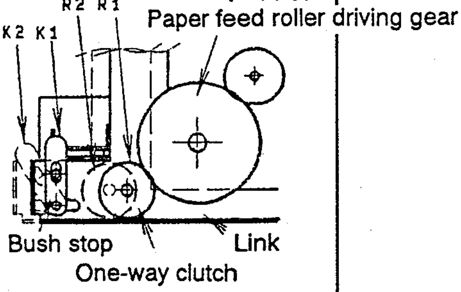
Motor	Major functions	Mode indication	
1. Head U/D motor	a) Moves the head up/down. (1) Home position (initial condition) (2) Ribbon take-up position (3) Paper feed position (4) Loading position (5) Printing position	 H1 H2 H3 H4 H5	 Platen Thermal head H5 H4 H3 H2 H1
	b) Drives the change arm. - Change arm (A) (1) Limiter driving (2) Neutral (3) Paper feed roller driving - Change arm (B) (1) Platen driving (2) Neutral	 A1 A2 A3 B1 B2	 Change gear on the ribbon side Change gear (movable) Change arm (A) A1 A2 A3 Change gear on the supply side (fixed)  B1 B2 Change arm (B) Worm wheel (platen) Worm gear (platen)
	c) Drives the brake and limiter lock. - Brake (take-up) (1) Brake ON (2) Brake OFF - Brake (supply) (1) Brake ON (2) Brake OFF - Limiter lock (1) Lock (2) Release	 T1 T2 S1 S2 L1 L2	 Limiter (supply) Limiter (take-up) Brake (take-up) S1 S2 T1 T2 Brake (supply)  L2 L1 Limiter lock Limiter (supply)
	d) Drives the link. - Paper feed roller (1) One-way clutch lock (2) Release - Loading/unloading of paper feed tray (1) Lock (2) Release - Paper eject arm	 R1 R2 K1 K2	 R2 R1 K2 K1 Paper feed roller driving gear Bush stop Link One-way clutch
2. Platen driving motor	- Platen driving - Ribbon driving - Paper feed roller driving - Paper eject roller driving		

Table 3-1.

The head driver motor determines the five positions of the head. The positions are related to each other and there are the following five modes which correspond to the respective positions.

Mode	**Major function**	**Head position**	**Change arm (A)**	**Change arm (B)**	**Brake (take-up)**	**Brake (supply)**	**Limite lock**	**Paper feed roller**	**Paper feed tray**
Mode 1	Initial condition	H1	A2	B2	T1	S1	L1	R2	K2
Mode 2	Ribbon transport	H2	A1	B1	T2	S2	L2	R2	K1
Mode 3	Paper feed	H3	A3	B1	T1	S1	L1	R1	K1
Mode 4	Paper transport	H4	A2	B1	T1	S1	L1	R1	K1
Mode 5	Print	H5	A1	B1	T2	S1	L2	R1	K1

Table 3-2.

3-2. SENSORS

Sensor	Functions	Location	Type
Paper tray sensor	Checks whether printing paper is available.	①	Transmission type
FG sensor	Detects the motor rotation speed to control the servo or the operations of the motor.	②	Photo interrupter
Paper feed sensor	Being located at the paper feed opening, it switches paper feed mode to paper send mode by detecting the transit of paper. It also detects paper feed errors by observing if paper passes by in a certain time.	③	Reflector type (long focus)
Eject sensor	Being located at the paper eject opening, it determines the timing to move the paper eject arm. It also detects paper eject errors by observing if paper passes by within a certain time.	④	Reflector type (short focus)
Cam and home sensor	Determines head positions in initial setting, ribbon winding, paper feed, paper send and print modes.	⑤	Reflector type (short focus)
Cartridge sensor	Detects whether the ribbon cartridge has been inserted fully to the specified position.	⑥	Microswitch
Paper-set sensor	Switches paper send mode to print mode by detecting the transit of paper. The print start positions for colors Y, M and C are determined by detecting the marks on paper.	⑦	Reflector type (long focus)
Ribbon sensor	Searches for the beginning of Yellow ribbon.	⑧	Transmission type
Interlock sensor (top)	Detects whether the guide (S) has been attached correctly.	⑨	Reflector type (long focus)
Interlock sensor (bottom)	Detects whether the bottom lid has been attached correctly.	⑩	Reflector type (long focus)
Ribbon selecet sensor	Detects the ribbon select mark (reflection and no reflection type) attached to the ribbon cassette with the reflection sensor.	⑪	Reflector type (long focus)

Table 3-3.

3-3. DESCRIPTION OF PRINTING OPERATIONS

The flow of printing operations is described here in relation to the positions of the printing paper, ribbon and head. (Arrows show the directions of rotation or movement.)

(1) Initial condition
The paper feed tray and the ribbon cassette can be removed as desired. (Condition prior to printing; when power is turned ON)

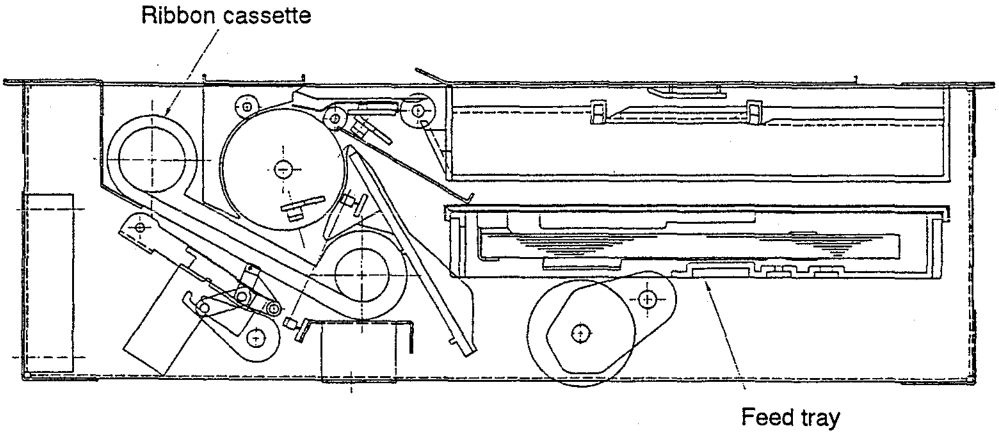


Fig. 3-5. Paper feed tray

(2) Press the print key.
To start a printing operation.

(3) Search for the beginning of the ribbon.
The beginning of the ribbon is found by detecting the beginning mark on the ribbon with a ribbon sensor.

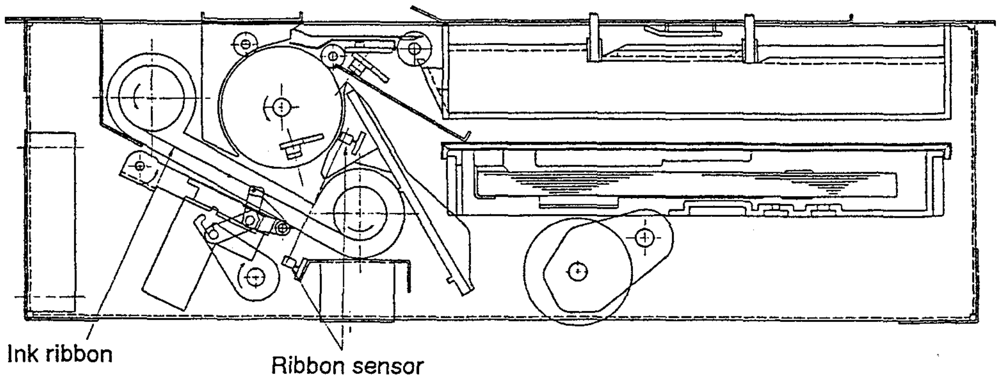


Fig. 3-6. (Mode 2)

(4) Paper feed operation

While depressing the printing paper against the upper, the paper feed roller rotates and transports the paper. The paper is transported until it touches the paper feed sensor.

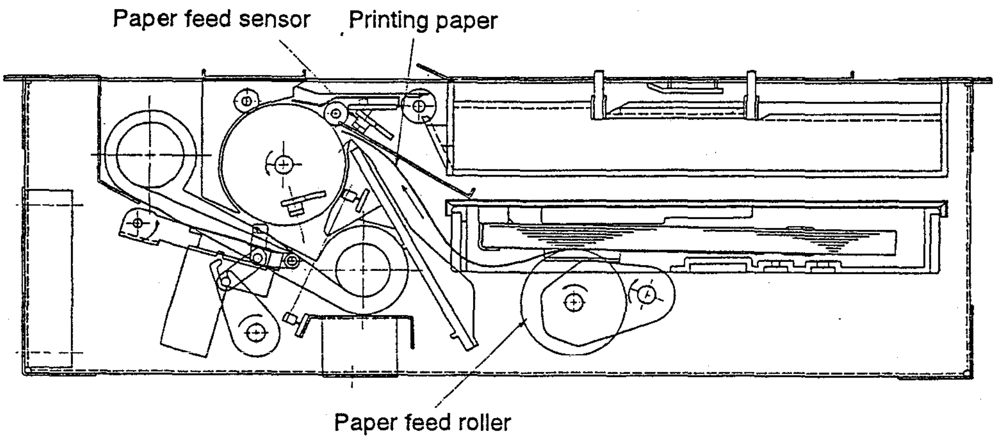

Paper feed sensor
Printing paper
Paper feed roller

Fig. 3-7. (Mode 4)

(5) Loading operation

The platen driving motor sends the paper to the head position apart from the paper feed roller.

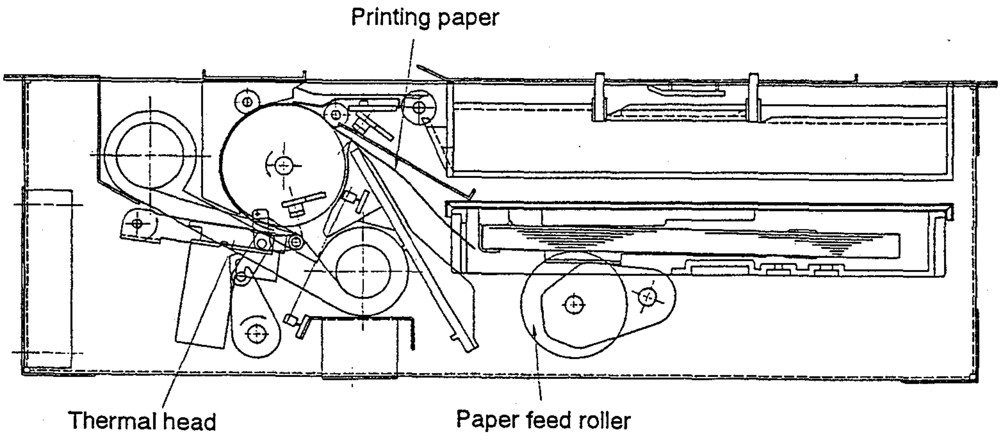

Printing paper
Thermal head
Paper feed roller

Fig. 3-8. (Mode 4)

(6) Print start of Yellow

The head is depressed against the platen, activating print mode (mode 5). At the time when the mark on the rear of the paper passes across the paper-set sensor, printing of Yellow starts.

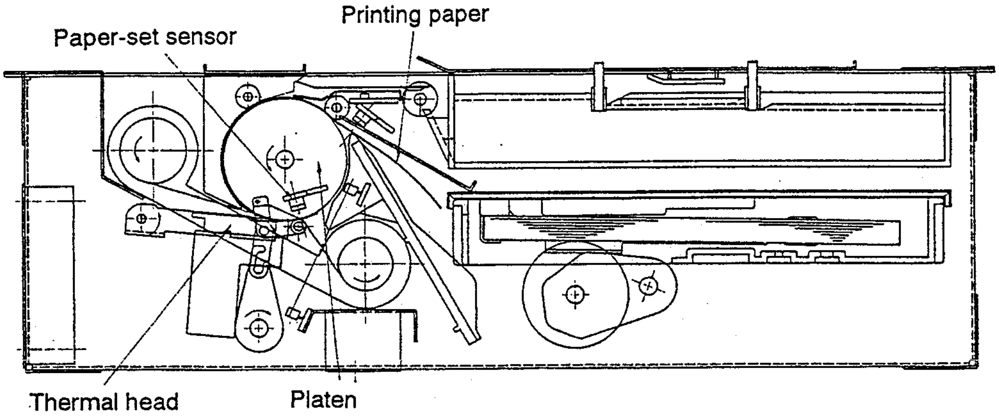

Printing paper
Paper-set sensor
Thermal head
Platen

Fig. 3-9. (Mode 5)

(7) Printing of Magenta and Cyan

Keeping the head depressed after printing Yellow, colors M and C are continuously printed by reading the rear mark of the paper with the paper-set sensor.

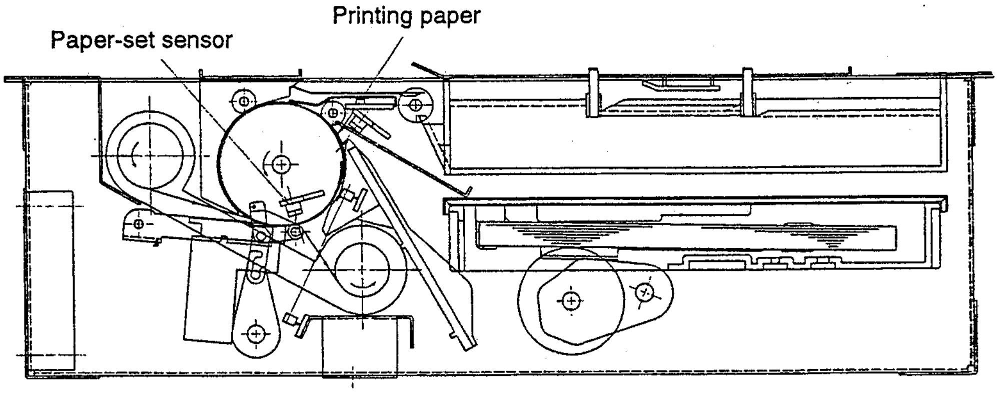

Printing paper
Paper-set sensor

Fig. 3-10. (Mode 5)

(8) Paper eject operation ①
After printing is completed, the paper is sent out at high speed, until the edge of the paper reaches the paper eject opening,

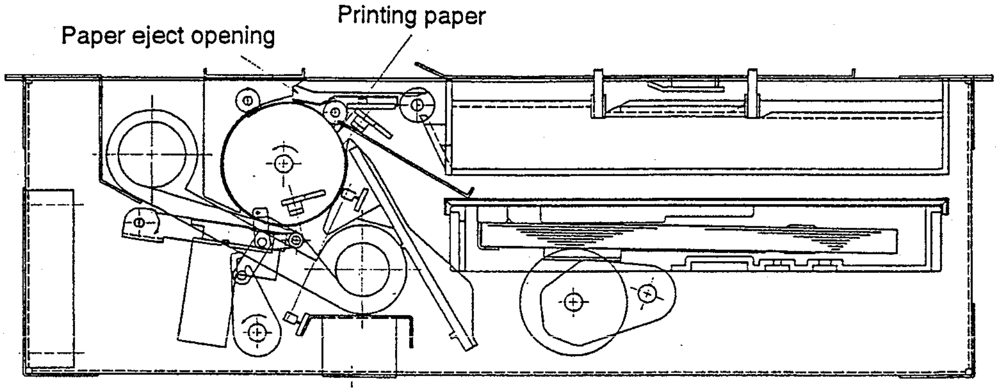

Paper eject opening
Printing paper

Fig. 3-11. (Mode 4)

(9) Paper eject operation ②
The platen rotates backwards, leading the paper to the paper eject tray through the paper eject guide.

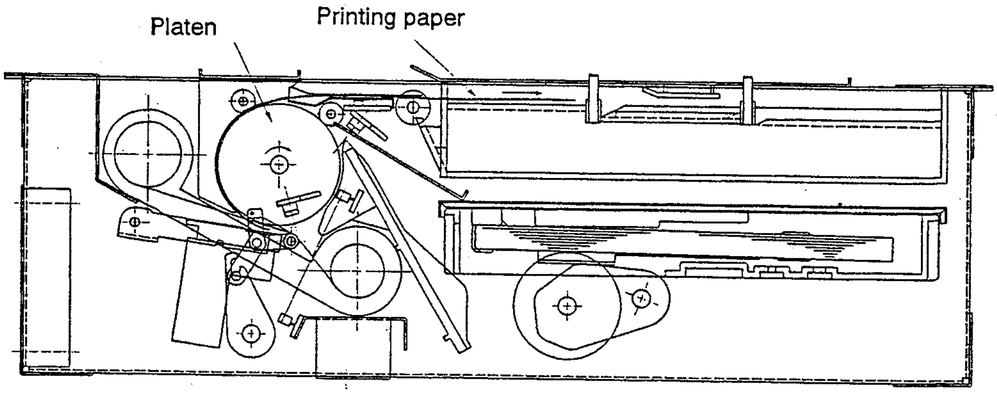

Platen
Printing paper

Fig. 3-12. (Mode 4)

(10) End of paper eject operation (Completion of the printing process)
While the head returns to the home position, the printing paper is sent to the specified position by the movement of the paper eject arm.

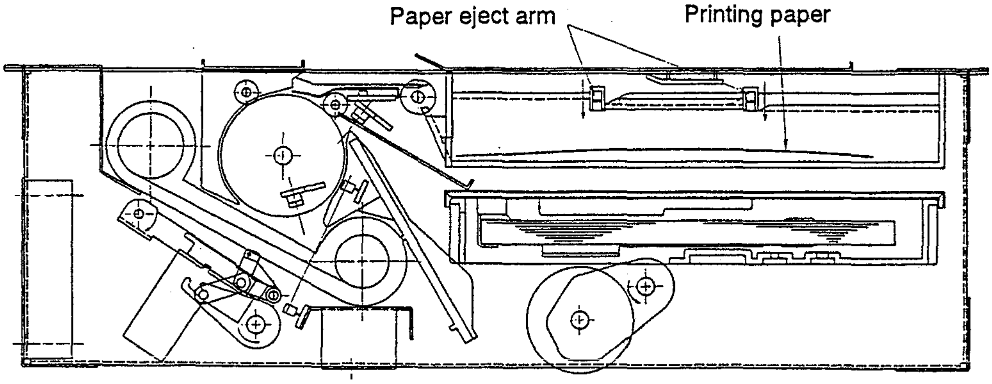

Paper eject arm
Printing paper

Fig. 3-13. (Mode 1)

3-4. RELATIONS BETWEEN ERROR MESSAGES AND SENSORS

No.	Error message	Sensors	Symptoms	Causes
1	BOTTOM HATCH OPEN	⑩	⑩ does not detect the bottom hatch.	1. No bottom hatch is set. 2. Defective sensor
2	FEED ERROR	③ ⑫	1. ③ does not detect the paper even a certain time has passed after pressing the print key. 2. ⑫ does not detect the paper even a certain time has passed after entering the loading mode.	1. Paper is not sent correctly. 2. Defective sensor
3	NO PAPER	①	① does not detect the paper.	1. The paper feed tray is not set or there is no paper in the paper feed tray. 2. Defective sensor
4	NO RIBBON CASSETTE	⑥	⑥ does not detect the ribbon cassette.	1. No ribbon cassette is set. 2. Defective sensor or defective ribbon switch spring
5	PLACE PAPER PRINT SIDE UP	⑫	⑫ does not detect the print start mark on the reverse side of the paper.	1. The paper in the tray is set print side down. 2. The paper and ribbon cassette are not matched. 3. Defective sensor
6	PROCESS ERROR	③ ④ ⑫	1. ③ detects the paper when the power is turned on. 2. ④ detects the paper when the power is turned on. 3. ⑫ detects the paper when the power is turned on.	1. Paper is not sent correctly for some reason. 2. Defective sensor
7	RIBBON ERROR	⑧	⑧ does not detect the beginning mark of the ribbon.	1. The ribbon is used up. 2. The ribbon is broken. 3. Defective sensor
8	TOP HATCH OPEN	⑨	⑨ does not detect the guide (S).	1. The guide (S) is not attached. 2. Defective sensor
9	CHECK RIBBON SETTING	⑥	⑥ does not detect the ribbon cassette.	1. The ribbon is came off during printing.

Table 3-4.

3-5. TYPICAL TROUBLES AND MEASURES

3-5-1. With Alarms

Error message	Causes and operations	Measures
No Ribbon Cassette	Deformation of the leaf spring for the ribbon switch	Replace.
	Improper positioning of the cartridge sensor	Readjust.
	Defective cartridge sensor	Replace.
Place Paper Print Side Up	1. Paper other than specified paper was used. 2. Paper was fed in upside down.	Use the appropriate paper in the correct direction.
	Defective paper-set sensor	Replace.
	Paper feed not straight	1. Check that the paper has been placed correctly on the tab. 2. Check that the tab of the paper feed tray moves smoothly. 3. Check that the torsion spring of the paper feed roller assembly has not been deformed.
Feed Error	Paper is not fed out from the paper feed tray.	1. Check that the tab of the paper feed tray moves smoothly. 2. Check that the torsion spring of the paper feed roller assembly has not been deformed.
	Paper is fed out from the tray but not wound around the platen. Operation → Open the bottom lid and remove the paper.	1. Check that the pinch roller (M) has been properly attached. 2. Check the paper feed sensor and replace it if defective.
Process Error	The ribbon was caught. Operation → Remove the upper lid and the guide (S) and then the ribbon and paper.	1. Check that the change gear shifts smoothly. 2. Check that the brake is firmly engaged with the gear of the limiter.
	Paper remains wound around the platen and cannot be ejected. Operation → Remove the upper lid and the guide (S) and then the ribbon and paper.	Check that the pinch roller (S) has been attached correctly.
	The paper eject arm is disturbed. Operation → Remove the upper lid and the guide (S) and then the ribbon and paper.	Check that the link moves smoothly.

Table 3-5.

3-5-2. Others

Troubles	Causes and operations	Measures
Horizontal stripes on prints	Dirty head	Clean the calorific block of the head by using alcohol with a cotton swab.
Vertical fine stripes on prints	Dirty or damaged worm gear of the platen driver motor	Replace the worm gear.
Shear in colors	Surface degradation of the platen	Replace the platen.

Table 3-6.

SONY®

BACKUP FILE

COLOR VIDEO PRINTER

UP-3000P

SERVICE MANUAL

SUPPLEMENT-2

Please add and replace your manual with this SUPPLEMENT-2.

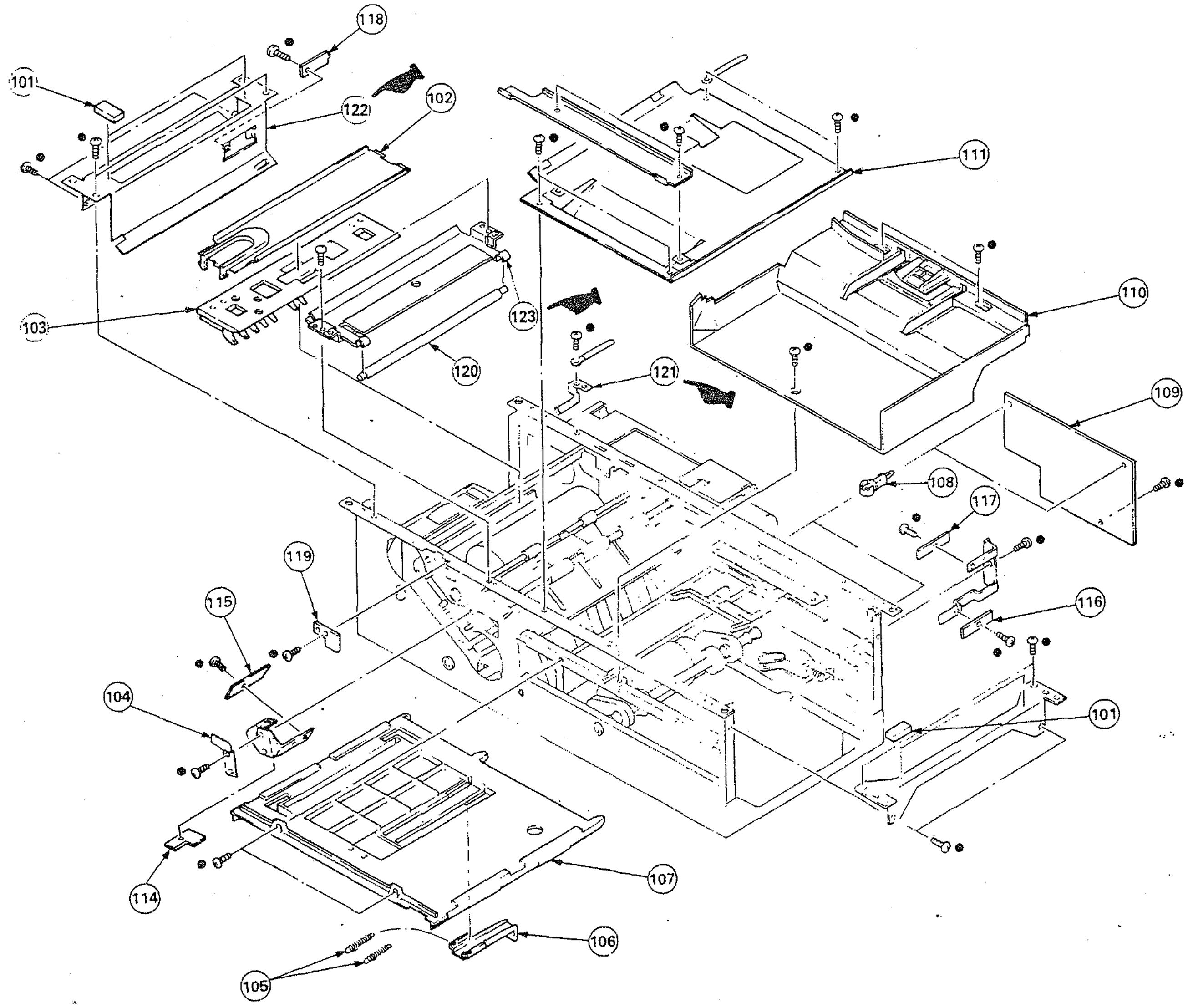
SUBJECT

- EXPLODED VIEWS

☛ : Changed portions

7-3. MECHANISM BLOCK (1)

● : BVTT3x6 7-682-547-04



Ref.No	Part No.	Description	Remark
101	*9-911-841-XX	CUSHION	
102	*X-3737-818-6	RETAINER BLOCK ASSY, GUIDE (S)	
103	A-8262-123-A	GUIDE (S) ASSY	
104	*3-737-810-01	SPRING	
105	3-737-862-01	SPRING, TENSION	
106	*3-737-861-01	ARM, TRAY EJECT	
107	*X-3737-829-1	GUIDE BLOCK ASSY, TRAY	
108	*3-680-767-00	SUPPORT, PC	
109	*A-8276-098-A	DUS-3 BOARD, COMPLETE	
110	*3-737-961-01	TRAY	
111	*A-8262-155-A	GUIDE ASSY, UPPER	
113	*3-697-580-01	SHEET, CUSHION	
114	*1-634-712-12	SW-14 BOARD	
115	*1-634-725-12	PTC-14 BOARD	
116	*1-634-724-12	PTC-13 BOARD	
117	*1-634-726-12	PTC-15 BOARD	
118	*1-634-721-12	SW-21 BOARD	
119	*1-634-719-12	SW-19 BOARD	
120	3-737-848-01	ROLLER, RIBBON ☛	
121	3-737-812-02	STOPPER, RIBBON ☛	
122	*3-737-947-02	GUIDE (T), RIBBON ☛	
123	X-3737-819-7	GUIDE BLOCK ASSY ☛	

UP-3000P (AEP)
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